Effects of Video Modeling on Customer Service Skills of Young Adults with Autism in

Community Employment Settings

By

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Abstract

Young adults with autism spectrum disorder (ASD) often experience barriers to competitive integrated employment. The complex problem of unemployment and lack of positive postsecondary employment experiences of individuals with ASD is described. The use of video modeling (VM) is presented as one means to enhance employment experiences for this population. Video modeling literature specific to improving employment skills of young adults with ASD is reviewed. A meta-analysis was conducted to evaluate the methodological rigor of included studies using the Council for Exceptional Children's (2014) *Standards for Evidence-Based Practices in Special Education*. Effects of VM interventions were evaluated using Tau-U. Results of the meta-analysis revealed strong effects for VM, but most studies occurred in contrived or school-based employment settings rather than competitive settings.

The purpose of this study was to evaluate the efficacy of VM to enhance customer service skills of young adults with ASD employed in community employment settings. Five young adults with ASD, ages 18-26, who were competitively employed or participating in work-based learning experiences participated. A multiple baseline across behaviors single case design methodology was used. Verbalization of greeting, service, and closing phrases contextualized to the different employment settings served as the target behaviors. A measure, the Observer Impression Scale, was developed to evaluate qualities of voice, timing, body language, and appropriate statements when spoken phrases were used. Co-workers, job coaches, and supervisors applied the VM intervention during the generalization condition. Maintenance probes were conducted at two- and four-weeks following intervention cessation. Social validity of the VM intervention was assessed via questionnaires.

Results indicated a functional relation between VM and verbalization of job-specific customer service phrases for all participants. Quality of delivery of the phrases also improved as measured by the Observer Impression Scale. Satisfaction with the VM intervention was overall high for young adults and their co-workers, job coaches, and supervisors. Maintenance varied across and within participants. Employment specialists, supervisors, vocational rehabilitation counselors, and other relevant stakeholders can consider VM a viable intervention to support social communication skills of individuals with ASD in community employment settings.

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Dedication

I dedicate this dissertation to my mother, Lu Ann Fischer, and to my former advisor, Dr. Richard L. Simpson, who encouraged me to pursue the doctoral degree. I know you both would be very proud of me.

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Key Terms

Americans with Disabilities Act (ADA): A civil rights law that prohibits discrimination against individuals with disabilities in all areas of life, including employment, public education, and all public and private places that are open to the general public (codified at 42 U.S.C. § 12101 et seq.).

Autism spectrum disorder (ASD): A developmental disorder comprised of two primary criteria: (1) deficits in social communication and social interaction across multiple contexts, and (2) restricted, repetitive patterns of behavior, interests, or activities (American Psychiatric Association, 2013).

Competitive integrated employment (CIE): Full-time or part-time employment at minimum wage or higher, with wages and benefits similar to employees without disabilities who perform the same work and working alongside co-workers without disabilities (34 C.F.R. §§361.5(c)(9).

Customized employment: A flexible process designed to personalize the employment relationship between a job candidate and an employer in a way that meets the needs of both. (United States Department of Labor, n.d.).

Evidence-based practice (EBP): Interventions or teaching strategies with empirical evidence demonstrating their efficacy. Several organizations, such as the Council for Exceptional Children, have standards for classifying interventions with empirical evidence in the field of special education.

National Longitudinal Transition Study 2012 (NLTS 2012): The NLTS 2012 is a largescale study funded by the U.S. Department of Education, Institute of Education Sciences to examine postsecondary outcomes of students with disabilities.

Social capital: Interpersonal relationships or other social assets of a group or organization that can be used to gain advantage for an individual.

Occupational identity: The concept that self-identity is closely related to an individual's choice of profession.

***Olmstead v. L.C.* (1999):** A landmark United States Supreme Court case that ruled unjustified segregation of individuals with disabilities is discrimination and a violation of Title II of the Americans with Disabilities Act. *Olmstead v. L.C.* ruled individuals with disabilities have the right to live and work in community placements rather than institutions or other separate facilities.

Point-of-view video modeling: A type of video modeling in which the video is filmed from the eye level of the learner and includes only the salient features of the target skill.

Self-video modeling: A type of video modeling in which the learner is filmed performing the target skill and then watches the video of him/herself performing the skill.

Traditional video modeling: A type of video modeling in which the learner views another individual, the video model, performing a behavior or skill targeted for improvement.

Video modeling (VM): An intervention in which a learner watches a video and then imitates the behavior or skill presented in the video.

Video prompting: A type of video modeling in which the target behavior is broken down into discrete steps and the learner is given the opportunity to perform each step after viewing the video clips.

Workforce Innovation and Opportunity Act (WIOA): The WIOA is landmark legislation designed to strengthen and improve the American workforce system and assist individuals who experience significant barriers to employment, including individuals with disabilities, to obtain high-quality jobs and careers (codified at 29 U.S.C. § 3101 et seq.).

Chapter I: Statement of the Problem

The overarching goal of special education is to prepare students with disabilities for postsecondary education, integrated employment, independent living, and community participation after exiting the K-12 public school system [34 C.F.R. § 300.43 (a) (2018)]. However, students with autism spectrum disorder (ASD) typically experience unsatisfactory postsecondary outcomes and unique challenges in the transition to adulthood compared to their peers without disabilities (Shattuck et al., 2012; Wehman et al., 2014a). Autism spectrum disorder is a lifelong developmental disorder comprised of two primary criteria: (1) deficits in social communication and social interaction across multiple contexts, and (2) restricted, repetitive patterns of behavior, interests, or activities (American Psychiatric Association [APA], 2013). The majority of individuals with ASD require services and supports throughout their lifespan, including in adolescence and adulthood, to enhance quality of life.

Approximately 50,000 transition-age youth with ASD graduate from high school each year (Roux, Rast, Anderson, & Shattuck, 2017). These individuals are no longer eligible for school-based special education services and must rely on services from adult agencies. Unfortunately, the adult social supports system is ill-equipped and underfunded to meet the needs of this population (Gerhardt & Lainer, 2011). Individuals with ASD who are not supported across the lifespan with programming, services, and interventions are likely to experience undesirable postsecondary employment outcomes such as unemployment, underemployment, and overall dissatisfaction with experiences in the workforce (Newman et al., 2011; Wilczynski, Trammell, & Clarke, 2013). Limited postsecondary employment opportunities can contribute to community disengagement and marginalization from society (Carter, Harvey, Taylor, & Gotham,

2013). The negative effects of unemployment and underemployment are exacerbated by a lack of access to the benefits associated with employment.

Benefits of Employment

Employment is critical for all individuals, regardless of disability status, to achieve economic self-sufficiency and an enriched life while contributing to the local community and society. Although financial income is an obvious benefit of employment, Jahoda (1997, 1981, 1982) posited a latent deprivation model with five additional albeit unintended functions of employment. These five latent benefits are time structure, social contact, collective purpose, identity/status, and activity. Jahoda (1984) stated individuals "have deep seated needs for structuring their time use and perspective, for enlarging their social horizon, for participating in collective enterprises where they can feel useful, for knowing they have a recognized place in society, and for being active" (p. 298). Employment may be the only experience that can simultaneously serve all five latent functions in modern societies (Jahoda, 1997, 1981, 1982).

Time structure. Employment provides a structure and routine to daytime activities (Jahoda, 1981). For example, unemployed individuals experience less structure in their daily routines due to a lack of externally imposed time structure that employment provides (Creed & Macintyre, 2001; Feather & Bond, 1983; Martella & Maas, 2000). The extent that individuals perceive their time as useful and structured contributes to positive psychological well-being (Paul, Geithner, & Moser, 2009; Wanberg, Griffiths, & Gavin, 1997). In addition, leisure time is typically viewed as more valuable when scarce and contrasted with employment (Jahoda, 1982). Individuals benefit most from leisure activities when balanced with structured activities such as employment.

Social contact. Employment provides shared experiences and interactions with individuals outside the nuclear family. For example, networking and collaborating with co-workers can turn into valuable social capital. Social capital is defined as interpersonal relationships that can be advantageous to an individual (Putnam, 1995; Seibert, Kraimer, & Liden, 2001). Developing social capital is particularly important for transition-age youth with disabilities (Trainor, Morningstar, Murray, & Kim, 2013). Transition-age youth with little or no social capital may experience a sense of social isolation and lack of community-based experiences (e.g., employment, postsecondary education, shared activities with same-age peers). In particular, unemployed youth with no paid employment reported higher levels of social loneliness compared to employed youth (Creed & Reynolds, 2001). Conversely, employment provides opportunities to network and build relationships with others, which can lead to community integration and social inclusion (Evans & Repper, 2000).

Collective purpose. Employment provides an outlet for purpose and shared goals outside one's self. A collective purpose is the opportunity to work with others towards goals that cannot be achieved alone (Hoare & Machin, 2010). Shared trust occurs when members of an organization work together towards the same goal (Leana & Van Buren, 1999; Lin, Cook, & Burt, 2001). Additionally, collaborating and working with others can contribute to cooperative action and a sense of purpose beyond one's personal goals. Members of a group (i.e., work organization) are likely to advance the common interests of the group (Olson, 2009).

Identity or status. Employment contributes to a person's identity and social status. For example, individuals frequently describe themselves using "I am" statements regarding their choice of profession (e.g., "I am a chef") rather than general statements (e.g., "I work as a chef"). Occupational identity is the concept that self-identity is closely related to an individual's choice

of profession (Unruh, 2004). Occupational identity has been described as the interaction between what an individual does and the interpretation of those actions within the context of relationships with others (Christiansen, 1999). Similarly, an individual's occupational identity is linked to social status and one's perceived place in society. Occupational identity is closely tied to relationships with others to create meaning for everyday events, such as conducting work.

Activity. Employment provides opportunities for movement and activity during the day. Regular physical activity is associated with decreased risk for obesity, cardiovascular disease, and many other diseases prevalent in the United States (Tudor-Locke & Myers, 2001; Warburton & Bredin, 2016). Full-time employees, including those with sedentary jobs, are more active than unemployed individuals (Van Domelen, 2011). This means employed individuals are likely to have better health and longevity, although job type is a strong predictor of daily activity levels for both men and women.

Jahoda (1982) argued all latent benefits of employment were important to an individual's well-being. More recent research suggests stronger associations exist between overall quality of life and time structure, status, and collective purpose (Creed & Macintyre, 2001). Different latent benefits of employment may have varying degrees of importance depending on individual characteristics and contexts. However, financial income is commonly considered the primary benefit of employment. Consequently, unemployed individuals do not experience the primary benefit of income nor the five latent functions of employment. Unemployed individuals are likely to be at risk for exposure to a host of negative effects associated with unemployment.

Negative Effects of Unemployment

The negative effects of unemployment are well documented in a variety of fields (McKee-Ryan, Song, Wanberg, & Kinicki, 2005; Paul & Moser, 2009) and include higher levels

of depression (Feather & O'Brien, 1986; Paul & Moser, 2009), low self-esteem (Winefield, Tiggemann, & Winefield, 1992), and overall poorer physical and mental health (Butterworth, Leach, Pirkis, & Kelaher, 2012; Linn, Sandifer, & Stein, 1985). Depression is perhaps the most frequently studied psychological variable related to unemployment (Jefferis et al., 2011; Murphy & Athanasou, 1999). Several longitudinal studies have demonstrated a clear negative effect of unemployment on mental health (Butterworth et al., 2011; Kessler, Turner, & House, 1989; Winefield, Winefield, Tiggemann, & Goldney, 1991). For example, unemployed individuals experience more psychological distress that contributes to feelings of helplessness and despair (Wanberg, 2012; Warr, 1978). Most research has focused on the direct effects of unemployment with the obvious suggested solution to obtain employment. However, long-term unemployment can have negative mental health effects during the course of an individual's life even after re-entering the workforce (Strandh, Winefield, Nilsson, & Hammarström, 2014). This suggests simply regaining employment does not confer immediate restoration of mental health problems associated with periods of unemployment and underscores the complex nature of this problem.

In addition to declined mental health, unemployment can lead to economic hardship and higher levels of poverty. Economic hardship can have both objective and subjective consequences (Price, Friedland, & Vinokur, 1998). Objective hardship occurs when inadequate finances requires an individual to prioritize essential spending in ways that may compound hardship (e.g., choosing to pay for a major car repair over purchasing health insurance). Subjective hardship occurs when an individual's current financial problems are expected to be indefinite, thereby causing anxiety and fear that perpetuate behavior leading to additional financial hardships (e.g., gambling for money to pay rent). Economic hardships associated with unemployment also negatively affect other aspects of physical and psychological functioning

throughout one's lifetime (Backhans & Hemmingsson, 2011; Gallie, Paugam, & Jacobs, 2003; Lynch, Kaplan, & Shema, 1997). Individuals with disabilities are not excluded from these negative effects of unemployment nor the positive effects associated with employment.

Disability and Employment

Although employment has a variety of benefits for all individuals, it may be especially advantageous for individuals with disabilities because they have historically been marginalized by society. Employment leads to increased social and community integration for individuals with disabilities and is associated with positive mental health and improved quality of life (Cocks, Thoresen, & Lee, 2015; Persson, 2000; Verdugo, Urries, Jenaro, Caballo, & Crespo, 2006). Employment confers a sense of purpose and belonging that can decrease loneliness and isolation for individuals with disabilities (Schur, 2002). In addition, employed individuals with disabilities rely less on government programs and make greater contributions to taxes compared to unemployed individuals with disabilities (Howlin, Alcock, & Burkin, 2005). Strengths and skills of individuals with disabilities can be desirable to employers while simultaneously contributing to the local community.

Federal lawmakers recognized the civil rights of individuals with disabilities, as well as the benefits associated with their employment, with the passage of the Americans with Disabilities Act (ADA) in 1990. President George H.W. Bush signed the ADA, which prohibits discrimination against individuals with disabilities and fosters full participation in all aspects of society, including employment. Title I of the ADA of 1990 specifically prohibits discrimination against individuals with disabilities in the application and hiring process, training procedures, job advancement, and other benefits associated with employment. Similarly, employers are required to provide reasonable accommodations for job seekers and employees with disabilities.

Individuals with disabilities are entitled to experiences and opportunities associated with civil and human rights afforded to individuals without disabilities such as living, working, and recreating in integrated environments (ADA, 1990). The ADA does not list specific disability categories but defines a disability as a physical or mental impairment that substantially limits one or more major life activities. The ADA was modeled after the Civil Rights Act of 1964 and the Rehabilitation Act of 1973 that prohibited discrimination on the basis of, race, religion, or national origin. For example, Section 504 of the Rehabilitation Act states:

> Disability is a natural part of the human experience and in no way diminishes the rights of individuals to live independently, enjoy self-determination, make choices, contribute to society, *pursue meaningful careers* and enjoy full inclusion and integration in the economic, political, social, cultural and educational mainstream of American society. [29 U.S.C. § 701 (a)(3) and 29 U.S.C. § 3001(a)(2)] (emphasis added).

These landmark laws were foundational to the Workforce Innovation and Opportunity Act (WIOA) signed by President Obama in July 2014. The WIOA is an employment-related law that amended the Rehabilitation Act of 1973 and Workforce Investment Act of 1998. Similar to previous employment legislation, the WIOA aimed to improve the American workforce system and help individuals who experience significant barriers to employment, including individuals with disabilities, obtain high-quality jobs and careers. Competitive integrated employment (CIE; further described below) is a primary component of the WIOA. For example, individuals with disabilities may receive pre-employment transition services to support the process of obtaining CIE (Workforce Innovation Technical Assistance Center, n.d.). Additionally, state vocational rehabilitation (VR) personnel are required to engage with employers to improve competitive employment outcomes for individuals with disabilities.

Types of Employment for Individuals with Disabilities

Despite the broad benefits of employment for individuals with disabilities and protections under federal legislation, individuals with disabilities access and obtain different types of employment. These employment experiences vary by several critical factors including wages, available supports, opportunity for job advancement, and degree of interactions with individuals without disabilities.

Competitive integrated employment. The WIOA defined CIE as work wherein: (1) the individual is compensated at a rate higher than the rate specified in the Fair Labor Standards Act of 1938 or the rate required by the State or local minimum wage, (2) the location is typically found in the community, and (3) opportunities for advancement are similar for other employees without disabilities who have similar job duties [34 C.F.R. §361.5(c)(9)(i-iii)(2018)]. "Typically found in the community" refers to employment settings in the competitive labor market not established for the purpose of employing individuals with disabilities. Employees with disabilities in CIE also interact with other employees without disabilities to the same extent that employees without disabilities interact with others. For example, a group of employees with disabilities working in the same community setting is typically not considered CIE due to the high amount of interactions with other individuals with disabilities. State VR counselors may evaluate employment settings to determine whether they meet WIOA criteria for CIE settings. Employees in CIE settings who choose to disclose their disability can receive workplace accommodations through the ADA.

The Supreme Court *Olmstead v. L.C.* (1999) ruling highlights the priority placed upon community-based employment over facility-based or separate settings. This court case involved two women with disabilities in Georgia who received psychiatric care at a hospital. Although

professionals recommended the women for a community-based program, both remained in the separate unit for several years. The women filed claims under the ADA to be released from the hospital to seek community-based opportunities. The Supreme Court ruled unjustified segregation of individuals with disabilities is a violation of Title I of the ADA. Specifically, states must provide community-based services when: (1) such services are appropriate for the individual, (2) the individual does not oppose community-based treatment, and (3) community-based services can be reasonably accommodated (*Olmstead v. L.C.*, 1999). Many states have adopted Employment First policies for individuals with disabilities to work in integrated, community-based work settings in lieu of separate employment settings (Hoffman, 2013). In addition, Employment First initiatives recognize CIE as the primary employment goal for individuals with disabilities (Butterworth, Christensen, Flippo, 2017; Wehman et al., 2018).

Supported employment. The WIOA defined supported employment as employment in an integrated work setting where an individual with a significant disability is working on a short-term basis towards CIE [29 U.S.C. § 705 (38)]. Individuals participating in supported employment may have never participated in CIE or competitive experiences may have been interrupted. As a result, supported employment entails ongoing support services in a way that the individual can achieve CIE. Job coaching, on-the-job training, job development, and other services are provided in a comprehensive way to enhance job performance in supported employment experiences (Cimera, 2012; Wehman et al., 2012).

Customized employment. The WIOA defined customized employment as CIE for an individual with a significant disability that is (1) based on the strengths, needs, and interests of the individual, (2) designed to meet the abilities of the individual with a disability and the business needs of the employer, and (3) applied using flexible strategies such as job exploration

and collaboration with the employer [29 U.S.C. § 705 (7)]. Customized job duties are created to meet previously unidentified or unmet employer needs. A unique work schedule or supervision arrangement may also be established. Customized employment entails an individualized relationship between employees and employers, so the needs of both parties are met (Citron et al., 2008; Riesen, Morgan, & Griffin, 2015).

Work-based learning. Work-based learning experiences are supervised, school-coordinated activities in which students with disabilities work towards employment-related competencies ("Work-Based Learning for Students with Disabilities," n.d.). Work-based learning experiences vary greatly and include activities such as field trips, career fairs, job shadowing, student run enterprises, apprenticeships, paid and unpaid internships, and paid employment. These experiences can occur in school, community-based, or simulated workplace environments. Many school districts have programs specifically for students, ages 18-21 years, who are still eligible for special education services under the Individuals with Disabilities Education Act (IDEA; 2004) but older than the typical high school student (Papay & Bambara, 2011). Work-based learning experiences are important for students with and without disabilities during elementary or middle school (e.g., self-exploration). Cease-Cook, Fowler, and Test (2015) described strategies for educational professionals to implement work-based learning experiences during each year of high school (e.g., job sampling, career planning). These experiences are particularly important for students with disabilities given participation in work-based learning is one predictor of improved postschool outcomes (Test et al., 2009).

Sheltered workshops. Sheltered workshops are facilities that primarily or exclusively employ individuals with disabilities in separate settings. A common premise of sheltered workshops is that individuals with disabilities will obtain necessary skills prior to community-

based employment (Cimera, 2011). The reliance on separate employment settings may be the legacy of early attempts to educate and provide productivity opportunities to individuals with disabilities, especially following deinstitutionalization (Hoffman, 2013). However, employees in sheltered workshops often work for subminimum wages (Inge, Banks, Wehman, Hill, & Shafter, 1988; Wehman et al., 2014a) and rarely transition to CIE (Armsby, 2014). For example, individuals with ASD in sheltered workshops earned lower wages and required more costly services compared to individuals with ASD in non-sheltered settings (Cimera, 2011; Cimera, Wehman, West, & Burgess, 2012). Employees with ASD in supported employment settings reported higher quality of life compared to those in sheltered workshops (García-Villamisar, Wehman, & Navarro, 2002). In addition, sheltered workshop employees with ASD demonstrated deteriorated skills and increased severe behavior during a three-year time period compared to community-based employees with ASD who received job coach support (Garcia-Villamisar, Ross, & Wehman, 2000). Despite calls to close sheltered workshops across the United States, states vary in the continuum of employment settings and experiences offered to individuals with disabilities (Winsor et al., 2016). However, the use of sheltered workshops as a permanent employment option for individuals with disabilities has been declared discriminatory in recent state-specific settlements (Yell, Katsiyannis, & Prince, 2017).

Transition Planning and Employment Outcomes for Individuals with Disabilities

The transition to adulthood can be a particularly challenging time for youth with disabilities. Special education services conclude after high school completion, requiring transition-age youth with disabilities and their families to navigate the complex adult service system. Unfortunately, transition-age youth with disabilities lag behind their same-age peers without disabilities in postsecondary education, integrated employment, independent living, and

increased community participation (Newman et al., 2011). Federal lawmakers have repeatedly attempted to address the overall unsatisfactory postsecondary outcomes of youth with disabilities by mandating transition services in the reauthorization of IDEA in 1990 and 2004. Transition services are a "coordinated set of activities" that:

> is designed to be within a results-oriented process, that is focused on improving the academic and functional achievement of the child with a disability to facilitate the child's movement from school to post-school activities, including postsecondary education, vocational education, *integrated employment* (including supported employment), continuing and adult education, adult services, independent living, and/or community participation [34 C.F.R. §300.43 (2018)] (emphasis added).

Transition services must be incorporated into the student's Individual Education Program (IEP) prior to age 16 or earlier if the IEP team determines appropriate. Students who received transition services during high school were more likely to be engaged in postschool employment and/or education activities (Test et al., 2009). Transition services include activities such as direct instruction, community experiences, and development of employment and postschool living objectives. The IEP team must incorporate the student's strengths, preferences, and interests when designing and implementing transition-related services. Postsecondary goals in the areas of education, employment, and independent living (if appropriate) are also included in the transition plan. Postsecondary goals must be updated annually to reflect the student's plans after high school graduation. Best practices in transition planning includes student and family involvement and coordination with adult service agencies (Alwell & Cobb, 2006; Shogren & Plotner, 2012). Federal lawmakers, researchers, and educational professionals have evaluated the quality of transition services by evaluating postsecondary outcomes of youth with disabilities.

The National Longitudinal Transition Studies (NLTS) are longitudinal studies conducted by the U.S. Department of Education over several decades to evaluate the education, employment, and independent living outcomes of national representative samples of transition-age youth with disabilities. The NLTS 2012 is the third and most recent data collected for these longitudinal studies. The NLTS 2012 surveyed approximately 13,000 youth and their parents during 2012 and 2013. Students in grades 7 through 12 with and without disabilities were surveyed, as well as students who received accommodations according to Section 504 of the Rehabilitation Act of 1973 [codified at 29 U.S.C. § 701]. The NLTS 2012 indicated approximately 40% of youth with an IEP had paid work experience in the past year compared to 50% of youth without an IEP (Lipscomb et al., 2017a). Twelve percent of youth with an IEP participated in school-sponsored paid or unpaid work activities, whereas only 7% of students without disabilities had paid or unpaid school-sponsored work activities (Lipscomb et al., 2017a). These findings revealed youth with disabilities continue to lag behind peers without disabilities in postsecondary employment outcomes but are more likely to participate in school-sponsored employment activities.

The NLTS 2012 also compared the postsecondary experiences of youth with different disability types. Youth with ASD, intellectual disability, multiple disabilities, and orthopedic impairments were more likely to have difficulties with health, communication, and independent living compared to youth with other disabilities (Lipscomb et al., 2017b). Youth in three of these same groups (ASD, intellectual disability, and multiple disabilities) were less likely than youth in all other disability categories combined to prepare for college, such as taking college entrance exams or placement tests (Lipscomb et al. 2017b). Employment experiences also vary by disability category. For example, youth with ASD, deaf-blindness, intellectual disability,

multiple disabilities, and orthopedic impairment were less likely to have paid jobs during high school compared to individuals with other disabilities (Lipscomb et al. 2017b). Specifically related to ASD, 23% of youth with ASD had paid work experience in the past year compared to 40% of youth overall with an IEP. In addition, when individuals with disabilities have paid work experiences, the types of occupations tended to be somewhat limited. For instance, the NLTS-2 found food preparation and other service-related jobs comprised the two largest categories of occupations (Newman et al., 2011). Youth with disabilities were more likely to work in service-related occupations rather than education or library occupations; computer, mathematical, engineering, and science occupations; or healthcare positions (Newman et al., 2011). Overall, results from the NLTS-2 and NLTS 2012 indicated some gains in employment outcomes for youth with disabilities. However, the improvements remain disappointing across a variety of outcomes compared to individuals without disabilities (Graetz, 2010; Howlin, 2000). Youth with specific disability categories, such as ASD, appear to be especially at-risk for inadequate postsecondary employment outcomes.

Autism Spectrum Disorder and the Transition to Adulthood

Autism spectrum disorder is a complex, lifelong disorder characterized by impairments in social and communication interactions across multiple contexts and repetitive patterns of behavior, interests, or activities (APA, 2013). Autism-specific characteristics are present during the early developmental period of life and commonly cause impairments in social, occupational, and other areas of daily functioning. For example, social and communication deficits can manifest via challenges with reciprocal conversation, deciphering meaning from facial expressions, eye contact, expressing emotions, and forming relationships with others. Restrictive and repetitive patterns of behaviors can range from repetitive body movements to narrow

specialized interests (APA, 2013; Boyd, McDonough, & Bodfish, 2012). Comorbid disabilities, such as intellectual disability, as well as mental health disorders like anxiety and depression also are common.

Research indicates the core features and maladaptive behaviors associated with ASD can sometimes subside with age (Esbensen, Seltzer, Lam, & Bodfish, 2009; Seltzer et al., 2003), particularly if early intervention services were provided (McGovern & Sigman, 2005). However, most individuals with ASD are likely to exhibit autism-specific symptoms throughout adolescence and adulthood (Graetz, 2010; Howlin, Goode, Hutton, & Rutter, 2004). For example, Shattuck et al. (2007) found the most prevalent symptoms in adulthood to be impairments in friendship and reciprocal conversation. Similarly, Howlin et al. (2004) found a majority of adults with ASD lived with their parents at home or other family members and few had close friends or permanent employment.

Childhood IQ and early language development are two primary predictors of better adult outcomes for individuals with ASD (Levy & Perry, 2011; Mason & Horovitz, 2010). Specifically, a childhood IQ of 50 or less is frequently associated with significant support needs in adulthood (Howlin, 2000). Conversely, a higher IQ is associated with larger gains in education and employment outcomes (Farley et al., 2009; Henninger & Taylor, 2012). Children who have developed speech by age five or six are reported to have more positive adult outcomes (Billstedt, Gillberg & Gillberg, 2007). Individuals with ASD are likely to make overall improvements in expressive and receptive language skills from childhood to adulthood (Levy & Perry, 2011). However, supports are commonly needed in adulthood to obtain postsecondary goals and outcomes (Hendricks & Wehman, 2009). For example, 922 young adults with ASD were included in NLTS-2 Wave 5 data (Newman et al., 2011; Roux et al., 2013). Approximately half

(53.4%) of young adults with ASD had worked for pay outside the home since leaving high school. Importantly, this employment rate was lower than rates for young adults with intellectual disability, emotional disturbance, learning disability, and specific language impairment, respectively (Roux et al., 2013). Furthermore, the majority of young adults with ASD worked part-time for approximately $8.10 per hour, which were lower wages than young adults with other disabilities. Greater social skills, cognitive abilities, and household incomes were associated with higher levels of employment (Newman et al., 2011; Roux et al., 2013).

Potential Barriers to Competitive Integrated Employment

Young adults with ASD face a variety of barriers to obtaining CIE given only approximately 10-55% of adults with ASD are employed (Hendricks, 2010; Nicholas, Attridge, Zwaigenbaum, & Clarke, 2015; Shattuck et al., 2012; Taylor & Seltzer, 2011). Approximately 45% of youth with ASD who graduated high school did not have any paid employment experiences in the two years since graduation (Shattuck et al., 2012). African American and Hispanic young adults with ASD were even less likely to participate in postsecondary employment experiences (Shattuck et al., 2012). Young adults with ASD are affected by external barriers (e.g., lack of effective vocational services, employer characteristics) and internal barriers (e.g., social challenges, comorbidity) to positive employment outcomes.

Limited VR services may complicate access to CIE and, therefore, serve as a potential external barrier to CIE. Individuals with ASD seeking VR services increased by 121% from 2002 to 2006 (Cimera & Cowan, 2009). However, the efficacy of VR services for individuals with ASD indicates mixed results (Hendricks, 2010). For example, individuals with ASD are more likely to be denied services or have their case closed because VR counselors reported their disability was too severe to benefit from services (Lawer, Brusilovskyiy, Salzer, & Mandell,

2009). Additionally, individuals with ASD who do not have intellectual disability or other disorders may be ineligible to participate in state or federally funded programs (Müller, Schuler, Burton, & Yates, 2003). Services for individuals with ASD often are resource-intensive but provide fewer working hours per week and lower wages compared to other disability groups (Cimera & Cowan, 2009). These outcomes may be attributed to employer attitudes towards hiring and supporting employees with ASD (López & Keenan, 2014) and stereotypical beliefs about what jobs best suit individuals with ASD (e.g., computer programming). Employers may lack general awareness about ASD and relevant accommodations available to employees with ASD (Kaye, Jans, & Jones, 2011). Vocational rehabilitation counselors, employment specialists, and other related service providers also may reinforce stereotypes, like perceptions that individuals with ASD prefer solitary work and repetitive tasks (Jobe & White, 2007; South, Ozonoff, & McMahon, 2005). As a result, young adults with ASD may be inappropriately referred to low-skilled, part-time employment inconsistent with their interests and strengths (Bennett & Dukes, 2013; Taylor & Seltzer, 2010). Contrary evidence suggests individuals with ASD can be successfully employed across a broad range of professions, including jobs that require collaboration, creative thinking, and complex skills (Chappel & Somers, 2010; Lorenz, Frischling, Cuadros, & Heinitz, 2016).

Individuals with ASD who apply for or are employed in jobs that are well-matched to their strengths and interests may still encounter barriers that lead to decisions against hiring, termination, or resignation. For example, young adults with mild forms of ASD reported difficulty understanding social interactions at work and problems with acclimating to work routines (Baldwin, Costley, & Warren, 2014; Müller, Schuler, Burton, & Yates, 2003). Workplace interactions may include skills such as interpreting facial expressions, collaborating

with colleagues, communicating with supervisors, and appropriate hygiene (Hendricks, 2010). The complex social interactions associated with job attainment (e.g., job interview process) and retention (e.g., customer and co-worker interactions) may impede access to long-term employment.

The combination of external and internal barriers contributes to individuals with ASD being at-risk for exclusion from critical postsecondary employment experiences. Accordingly, ASD-specific employment services and interventions are needed that promote community-based employment aligned to the interests and skills of the individual. Employees with ASD will likely need social and communication supports to successfully navigate their workplace. In addition, employers and other relevant stakeholders (e.g., co-workers, job coaches) will likely benefit from instruction regarding how best to meet the needs of employees with ASD.

Employment-Related Social Skills

Employment in the 21st century often requires a variety of skills that go beyond mere task completion. Employees with disabilities are more likely to experience job termination due to poor social competence and skills (i.e., soft skills) rather than general job performance (Agran, Hughes, Thoma, & Scott, 2016; Butterworth & Strauch, 1994). Soft skills often require a combination of interpersonal and social skills (Dixon, Belnap, Albrecht, & Lee, 2010; Morningstar, Lombardi, Fowler, & Test, 2017). Soft skills include personal qualities, attributes, and motivations that are valued in employment settings and other life domains (Heckman & Kautz, 2012). Some individuals may readily learn these skills while others will benefit from instruction to exhibit positive interpersonal skills specific to their employment setting. Employers identified 10 soft skills most important for employment settings including: integrity, community, courtesy, responsibility, social skills, positive attitude, professionalism, flexibility,

teamwork, and work ethic (Robles, 2012). However, entry-level employees often lack soft skills (Lindsay et al., 2014), and transition-age youth with disabilities will likely benefit from increased emphasis on career-related soft skills (Morningstar et al., 2017).

Customer service positions require a nuanced set of soft skills. For example, common customer service skills include knowledge of specific products and services coupled with effective communication skills to interact with customers. Many customer service positions also require the ability to respond to problems (e.g., customer complaints) and make sales. The U.S. Bureau of Labor Statistics estimated customer service skills were required for approximately one-fourth of all types of employment in 2016 (Lawhorn, 2018). Similarly, the Occupational Outlook Handbook identified customer service skills as important in seven of the 10 occupations employing the most individuals in the United States in 2016. The largest customer service occupation was retail salesperson, followed by cashiers, food workers, office clerks, waiters/waitresses, stock clerks, and receptionists, among others. Customer service positions in the United States are predicted to grow between 2016-2026 (Lawhorn, 2018). Individuals with and without disabilities must consistently demonstrate positive customer service skills to be successfully employed in such positions.

Customer service positions also require skills to interact with others using nonverbal communication skills, such as body language. There is a positive link between nonverbal emotion recognition and job performance, particularly for jobs requiring face-to-face interactions (Byron, Terranova, & Nowicki, 2007). The interactions between an employee and customer is commonly referred to as the service encounter and is an important part of the service delivery process (Sundaram & Webster, 2000). The employee's display of friendliness can positively influence customer perceptions of service quality. The nonverbal components of these

interactions are equally as important as the verbal components. For example, tone of voice, timing of interactions, and body language contribute to the overall quality of the service encounter. Individuals with ASD will likely need explicit instruction to improve both verbal and nonverbal aspects of communication at work (Reichow & Volkmar, 2010).

Evidence-Based Practices in Special Education

Evidence-based practices (EBPs) for learners with ASD may provide an effective means of supporting young adults with ASD in CIE settings. Evidence-based practices are interventions with experimental support demonstrating their efficacy (Cook, Tankersley, & Landrum, 2009; Gersten et al., 2005; Horner et al., 2005; Odom et al., 2005). The IDEA (2004) and the Elementary and Secondary Education Act (ESSA) require school personnel to use interventions, practices, and curricula with scientifically-based research to the maximum extent possible. Evidence for a particular intervention is evaluated on a continuum rather than a dichotomy. For example, the ESSA describes four tiers of evidence for interventions: (1) strong evidence (experimental study), (2) moderate evidence (quasi-experimental study), (3) promising evidence (correlational study), and (4) demonstrates a rationale (logic model + research + effort to study).

Similarly, the Council for Exceptional Children (CEC) set standards for clarifying what constitutes an EBP in special education (CEC, 2014; Cook et al., 2015). CEC's *Standards for EBPs* can be applied to a group of studies to examine the evidence-base for a particular intervention. According to the methodological quality of the studies examined, CEC classifies interventions in one of five categories: (1) EBP, (2) potentially EBP, (3) mixed effects, (4) insufficient evidence, and (5) negative effects. Using the best available evidence to inform intervention decisions is important to enhance outcomes for individuals with disabilities (Cook et

al., 2009; Stockard & Wood, 2017). Professionals who serve individuals with disabilities should use EBPs to the maximum extent possible when serving their students or clients.

However, much of the ASD intervention research examining specific EBPs in various contexts has focused on children rather than transition-age youth. As a result, the existing research on employment interventions for adolescents and young adults with ASD is limited (Nicholas et al., 2015; Taylor et al., 2012). For example, Wong et al. (2015) conducted an exhaustive literature review to identify and describe EBPs for learners with ASD. Of the 27 EBPs identified, all 27 were effective for individuals between the ages of 0-18, while 12 practices met evidence-based criteria for individuals ages 19-22. In addition, the majority of ASD intervention research has taken place in K-12 school and clinical settings; whereas, young adults with ASD are more likely to be in postsecondary settings such as job sites, colleges, universities, residences, recreation and leisure areas, and other community-based locations. Postsecondary settings and contexts are fundamentally different from K-12 settings. Although EBPs for individuals with ASD in school and clinical settings may be effective in community-based employment settings, conclusions about intervention effects and acceptability (i.e., social validity) require empirical investigation.

Research is needed to examine EBPs for learners with ASD in the context of community-based employment settings and specifically CIE settings. For example, the majority of the articles included by Wong et al. (2015) focused on communication (n = 182) and social skills (n = 165) while considerably few focused on employment skills (n = 12). Moreover, the included studies focused primarily on promoting communication and social skills in school settings. Wong and colleagues (2015) suggested additional research was needed to support the communication and social skills of young adults with ASD in employment settings. Importantly,

examination of existing EBPs as employment supports may enhance the postsecondary employment experiences of adolescents and young adults with ASD.

Video Modeling

Video modeling (VM) is an EBP for learners with ASD with a large literature base demonstrating its efficacy (Bellini & Akullian, 2007; Qi, Barton, Collier, & Lin, 2018; Mason, Ganz, Parker, Burke, & Camargo, 2012; Wang, Cui, & Parrila, 2011; Wong et al., 2015). Video modeling is a method of instruction that uses a video recording to provide a visual model of a targeted behavior (Wong et al., 2015). The video model is shown to the learner who then imitates the targeted behavior, skill, or task. Individuals with ASD often experience limited imitation skills to a degree that intervention is needed (Vanvuchelen, Roeyers, & De Weerdt, 2011; Whalen, Schreibman, & Ingersoll, 2006). Therefore, interventions that provide visual models of targeted behavior to imitate can potentially overcome some of the challenges associated with ASD (Williams, Whiten, & Singh, 2004).

Video modeling is based on Bandura's (1969) social learning theory which posits individuals learn by watching and imitating someone's behavior. Imitation is important to cognitive and social development and serves multiple functions, such as learning new skills and strengthening bonds with others (Vivanti & Hamilton, 2014). For example, Bandura, Ross, and Ross (1961) found children acted more aggressively after observing a same-age peer model aggressive behavior. Bandura and Walters (1977) noted children imitated behaviors of others with and without reinforcement, and their behavior generalized to other settings. Bandura's findings and social learning theory generally suggests individuals learn via direct contact with contingencies of reinforcement but also indirectly by observing others. As a result, VM appears

to be particularly well-suited for learners with ASD who have demonstrated a robust imitation repertoire (Ayres, Travers, Shepley, & Cagliani, 2017).

Initially, VM studies required cumbersome and bulky technology that made production and implementation expensive and impractical. As technology for producing video models became readily available and increasingly affordable, more researchers investigated how VM worked for learners with ASD. Researchers also began examining ways to alter and investigate varied procedures in ways that were more practically feasible. This led to the development of specific types of VM and innovative approaches to deliver the videos (e.g., applications, handheld devices, web-based programs). Variations of VM have emerged with different bodies of evidence and include traditional VM, video self-modeling, video prompting, point-of-view, and video feedback depending on who models the behavior and how the videos are filmed.

Types of video modeling. Traditional VM entails the learner viewing another individual (i.e., the model) performing a skill targeted for improvement. The model can be any individual (e.g., same-age peer, family member, or adult model with or without disabilities) who can properly perform the target skill (Ayres et al., 2017). Traditional VM has led to faster skill acquisition compared to traditional in-vivo modeling for individuals with ASD (Charlop-Christy, Le, & Freeman, 2000). Traditional VM often include editing features, such as opening text slides or voice-over, depending on the target skill and learner characteristics.

Video self-modeling entails the learner observing him/herself performing the target skill. The task is commonly at a more advanced level than the learner performs independently (Buggey, Toombs, Gardener, & Cervetti, 1999). If the learner is not able to perform the target skill consecutively, then the video footage can be edited. That is, the learner can perform one step at a time with prompts and assistance as needed and all steps can be edited together at a later

time. Individuals may enjoy watching themselves on the video more than a video model and, consequently, may attend more closely to the video. One collateral benefit of video self-modeling is learners are depicted as capable and independent while modeling their own behavior (Bellini & McConnell, 2010).

Video prompting involves breaking the target behavior down into discrete steps on brief video clips (rather than one video demonstrating the entire skill). The learner watches a brief video clip showing one step of the target behavior, immediately performs that step, then watches the next video clip of the corresponding step. This continues until the target behavior has been performed in its entirety. Single steps of the target skill presented one at a time may be beneficial for learners with significant support needs or for particularly complex skills (Canella-Malone et al., 2011; Sigafoos et al., 2007). For example, video prompting has been used to teach price comparison skills to adolescents with ASD and intellectual disability (Weng & Bouck, 2014).

Point-of-view VM entails the learner viewing only the salient features of the target skill. The video is filmed from the point-of-view or eye level of the learner and typically does not feature video models. Point-of-view VM has the advantage of eliminating extraneous or irrelevant cues and only showing the learner what to imitate. For instance, point-of-view VM was used to teach toy-play skills to preschoolers with ASD with video clips featuring two hands manipulating the toys (Hine & Wolery, 2006).

Video feedback entails the learner watching a recorded video of him/herself performing the target task. Learners self-evaluate their performance on the target behavior after viewing the video or an interventionist can also provide feedback. Feedback from an interventionist may include praise, corrective feedback, or both (English et al., 2017). Learners use self-evaluation procedures to rate their own performance, which influences future responding. For example,

children with ASD rated their videotaped interactions with non-disabled peers using green happy faces representing positive interactions and red sad faces representing negative interactions (Maione & Mirenda, 2006).

Researchers and practitioners may combine different types of VM or combine VM with other interventions. In fact, several studies have examined the efficacy of different types of VM. For example, Sherer et al. (2001) examined the efficacy of self-video versus traditional VM for children with ASD. The dependent variable was responding to conversational questions (e.g., "What do you like to do at recess?" and "What is your bedtime?"). The authors found both video self-modeling and traditional VM to be effective. Researchers have also combined VM with other interventions to enhance social skills of learners with ASD. Scattone (2008), for example, used VM and social stories to enhance the conversation skills of a boy with Asperger syndrome.

Video Modeling to Enhance Employment Experiences

Video modeling has been used to teach a variety of skills to individuals with ASD (e.g., motor, self-monitoring, vocational, play, emotion skills; Bellini & Akullian, 2007). There is a large literature base for VM studies to enhance social and communication outcomes for individuals with ASD. For example, VM has been used to initiate social interactions with peers (Grosberg & Charlop, 2014), maintain a conversation (Sansosti & Powell-Smith, 2008), and make play-related statements (Taylor, Levin, & Jasper, 1999). A recent systematic review concluded VM was an EBP for teaching social and communication skills (Qi et al., 2018). However, the context of these social and communication outcomes was primarily school and clinical settings. Little empirical inquiry exists about how to increase social engagement of young adults with ASD in community-based employment settings.

When VM has been applied in employment settings, the targeted skills are predominantly related to job performance or task acquisition rather than employment-related social behaviors. For example, young adults learned tasks specific to the employment setting, such as cleaning a glass display case at a museum (Kellems & Morningstar, 2012) or planting flowers in a garden (English et al., 2017). Video modeling has been used to teach clerical skills such as sorting mail (Alexander, Ayres, Smith, Shepley, & Mataras, 2013), making photocopies (Bereznak, Ayres, Mechling, & Alexander, 2012; Cihak & Schrader, 2008), and shredding paper (Goh & Bambara, 2013). Cleaning tasks are also common in the VM employment literature (e.g., Cullen, Alber-Morgan, Simmons-Reed, & Izzo, 2017). These studies and others support the utility of VM to improve job performance, but few studies have focused on social skills in various employment settings and only one known study has utilized VM to enhance customer service skills of an individual with ASD (Bross, Travers, Munandar, & Morningstar, 2018).

Summary and Research Questions

Individuals with ASD are not exempt from the negative effects associated with unemployment and underemployment and likely do not experience the primary (i.e., financial income) or latent benefits of employment (i.e., time structure, social contact, collective purpose, identity/status, and activity). Existing EBPs for learners with ASD may enhance the employment experiences of this population. In particular, VM may be an effective and acceptable means of promoting CIE of individuals with ASD in a variety of professions, including jobs that require social interactions such as customer service positions. One way to improve interactions with customers is to explicitly teach customer service phrases contextualized to the employment setting and required job tasks. Young adults with ASD employed in customer service positions may benefit from a VM intervention that teaches customer service phrases. In addition,

individuals in the employment setting (e.g., co-workers, job coaches, supervisors) can potentially assist with implementation of a VM intervention as a workplace support. Therefore, the purpose of this research was to examine whether a VM intervention improved the customer service skills of young adults with ASD in community employment settings. The following questions guided this research:

1. What types of employment experiences were targeted by VM researchers to improve job skills of individuals with ASD?
2. What types of job skills were targeted by VM researchers to improve job-specific tasks and/or employment-related social skills of individuals with ASD?
3. Does the methodological rigor of VM studies justify classification as an EBP for improving job skills of individuals with ASD according to CEC's (2014) *Standards for EBPs*?
4. What were the outcomes for high-quality VM employment research for individuals with ASD?
5. To what extent does a VM intervention increase the verbalization of job-specific customer service phrases for young adults with ASD in community employment settings?
6. To what extent does a VM intervention improve the quality of delivery of customer service phrases for young adults with ASD as measured on an Observer Impression Scale in the categories of tone, timing, body language, and appropriate statements?
7. To what extent do co-workers, job coaches, and/or supervisors implement a VM intervention with a fidelity for young adults with ASD as a means to generalize to natural intervention agents?

8. Following VM intervention cessation, to what extent do young adults with ASD maintain verbalization of customer service phrases at two and four weeks?
9. What is the social validity of a VM intervention to increase the customer service skills of young adults with ASD as reported by young adults and their co-workers, job coaches, and/or supervisors?

Chapter II: Meta-Analysis of Video Modeling for Employment Skills

Video modeling (VM) can be used to improve employment-related outcomes of individuals with autism spectrum disorder (ASD). Systematic reviews and meta-analyses have found generally positive effects of VM for individuals with ASD (Bellini & Akullian, 2007; Mason, Davis, Ayres, Davis, & Mason, 2016; Mason et al., 2012; Wang et al., 2011). The majority of studies in VM systematic reviews and meta-analyses for individuals with ASD employ single-case research design. Single-case research design is a commonly used methodology for intervention research to improve outcomes for individuals with ASD. Visual analysis is the primarily method to determine functional relations between independent and dependent variables for individual participants (Barton, Lloyd, Spriggs, & Gast, 2018; Kratochwill et al., 2010). However, single-case studies can also be synthesized to examine the effectiveness of a particular intervention across a body of literature. Calculating standardized between-case effect sizes for determining magnitude of intervention effect has become increasingly common (e.g., Davis, Mason, Davis, Mason, & Crutchfield, 2016; Mason et al., 2016). Magnitude of change in single-case research design may have particular relevance when synthesizing studies for diverse audiences beyond special education researchers (Shadish, Hedges, Horner, & Odom, 2015).

Previous VM reviews for individuals with ASD have used different effect-size measures and found overall positive effects across a variety of outcomes. For example, one of the earliest VM reviews (Bellini & Akulllian, 2007) examined the effectiveness of VM and video self-modeling. Twenty-three single-case VM studies were included in their review, and percent of nonoverlapping data (PND; Scruggs, Mastropieri, & Casto, 1987) was used as the magnitude of change. Results indicated both types of VM were effective to address social and communication,

behavioral, and functional skills for participants ages three to 20 (Bellini & Akullian, 2007). More recently, Qi and colleagues (2018) conducted a systematic review of VM interventions to improve social communication skills for individuals with ASD. Findings from their review of 24 single-case research design studies indicated VM met *What Works Clearinghouse* (WWC; Kratochwill et al., 2010) standards for an EBP. Qi et al. (2018) also calculated four nonoverlap indices: PND (Scruggs et al., 1987), the percent of Phase B data points exceeding the median of the baseline phase or PEM (Ma, 2006), pairwise data overlap squared or PDO^2 (Parker & Vannest, 2009), and Tau-U (Parker, Vannest, Davis, & Sauber 2011). Results from the four nonoverlap indices indicated VM was moderately effective for improving social communication skills of individuals with ASD.

Relatedly, Wang and colleagues (2011) conducted a meta-analysis to examine the effectiveness of peer-mediated and VM interventions for children with ASD using hierarchical linear modeling. Peer-mediated and VM interventions yielded large effect sizes and were found to significantly improve the social performance of children with ASD. However, age was a moderating factor and authors noted age may impact the effectiveness of both interventions. Specifically, VM was found to be slightly more effective for younger children compared to older participants (Wang et al., 2011). Finally, Mason et al. (2016) meta-analyzed video self-modeling studies that met WWC methodological standards (Kratochwill et al., 2010). Effect size analysis for methodologically sound studies was calculated using Improvement Rate Difference (Parker, Vannest, & Brown, 2009). A moderate magnitude of change upon implementation of video self-modeling was found for a variety of outcomes and particularly social communication and behavioral skills. However, the majority of included participants were preschool and elementary

aged participants and authors noted there were gaps in the evidence regarding the effectiveness for video self-modeling with older individuals with ASD (Mason et al., 2016).

These reviews found VM to be meet EBP criteria according to various standards (e.g., WWC) with overall positive effects for individuals with ASD. However, a specific focus on the effects of VM to improve job skills has not been reported, and it is unclear whether effect sizes associated with VM are influenced by applications in employment contexts. Given VM has been used in various ways to support a variety of outcomes for individuals with ASD, it seems plausible that effect sizes for VM to improve job skills would be moderate or high. However, this has yet to be established, and it may be that moderating factors (e.g., type of skill taught, employment setting, participant characteristics) influences responding. The historically unsatisfactory employment outcomes for individuals with ASD (Newman et al., 2011; Shattuck et al., 2012; Taylor & Seltzer, 2011) warrants inquiry regarding the effects of VM to improve employment experiences for this population.

Previous employment reviews for individuals with ASD have focused on interventions to improve job performance and employment outcomes broadly (Bennett & Dukes, 2013; Nicholas et al., 2015; Seaman & Cannella-Malone, 2016; Taylor et al., 2012) with researchers describing this body of literature as limited and lacking methodological rigor. As described, previous broad reviews of the VM literature have also been conducted (Ayres & Langone, 2005; Bellini & Akullian, 2007; Wong et al., 2015) with a focus on specific outcomes, such as social communication skills (Qi et al., 2018). However, the methodological quality of the VM intervention literature to improve job skills for individuals with ASD is unclear, and the synthesized effects of this literature are unknown. In particular, no known review has applied the Council for Exceptional Children's (CEC; 2014) *Standards for Evidence-Based Practices in*

Special Education (referred to as *Standards for EBPs*) to this body of literature. CEC's (2014) *Standards for EBPs* is an approach to categorizing EBPs in special education. Although VM is an established EBP for learners with ASD, there is value in determining the participant characteristics and context in which an established EBP may be effective (Lane & Carter, 2013). Tau-U was selected as an indicator of magnitude due to its ability to compare individual baseline data points to intervention data points in adjacent phases (Parker et al., 2011; Parker & Vannest, 2014). Therefore, the purpose of this meta-analysis was to examine the methodological rigor and synthesized effects of VM studies to improve job skills of individuals with ASD. The following questions guided this review:

1. What types of employment experiences were targeted by VM researchers to improve job skills of individuals with ASD?
2. What types of job skills were targeted by VM researchers to improve job-specific tasks and/or employment-related social skills of individuals with ASD?
3. Does the methodological rigor of VM studies justify classification as an EBP for improving job skills of individuals with ASD according to CEC's (2014) *Standards for EBPs*?
4. What were the outcomes for high-quality VM employment research for individuals with ASD?

Method

Article Selection

Article selection procedures consisted of electronic, hand, and ancestral searches of the VM employment literature for individuals with ASD, as well as expert solicitation. All steps of the search process were conducted by the first two authors with interrater agreement reported for

each step. First, the following search string was used to identify potential articles in electronic databases: all (autism) OR (autism spectrum disorder) AND all (employ*) OR (vocation*) AND (video) OR (video modeling) OR (video instruction). Databases searched included Academic Search Complete, Educational Resources Information Center, ProQuest Research Library, PsycINFO, and Psychology and Behavioral Sciences Collection. Electronic searches returned 49 results after removing duplicates. Titles and abstracts were read by the first two authors to determine if articles met inclusion criteria. Fourteen studies were read in full, and 13 of these 14 studies were included in the review using a consensus approach to determine article eligibility.

Hand searches were then conducted in academic journals that published a minimum of two included articles (see inclusion criteria below). Hand searched journals included *Focus on Autism and Other Developmental Disabilities, Journal of Vocational Rehabilitation, Developmental Neurorehabilitation, Education and Training in Autism and Developmental Disabilities,* and the *Division on Autism and Developmental Disabilities Online Journal.* Electronic versions of the journals were searched if hard copies were unavailable in university library stacks. Hand searches yielded two additional articles.

Ancestral searches of included articles (n = 20) and relevant reviews of the literature (n = 9) were also conducted. Reviews of the literature focused on employment-related interventions for individuals with ASD were searched (Anderson et al., 2017; Bennett & Dukes, 2013; Hedley et al., 2017; Nicholas et al., 2015; Seaman & Cannella-Malone, 2016; Taylor et al., 2012). Ancestral searches were also conducted on general VM reviews for any outcome (Ayres & Langone, 2005; Bellini & Akullian, 2007; Wong et al., 2015). Ancestral searches yielded two additional articles.

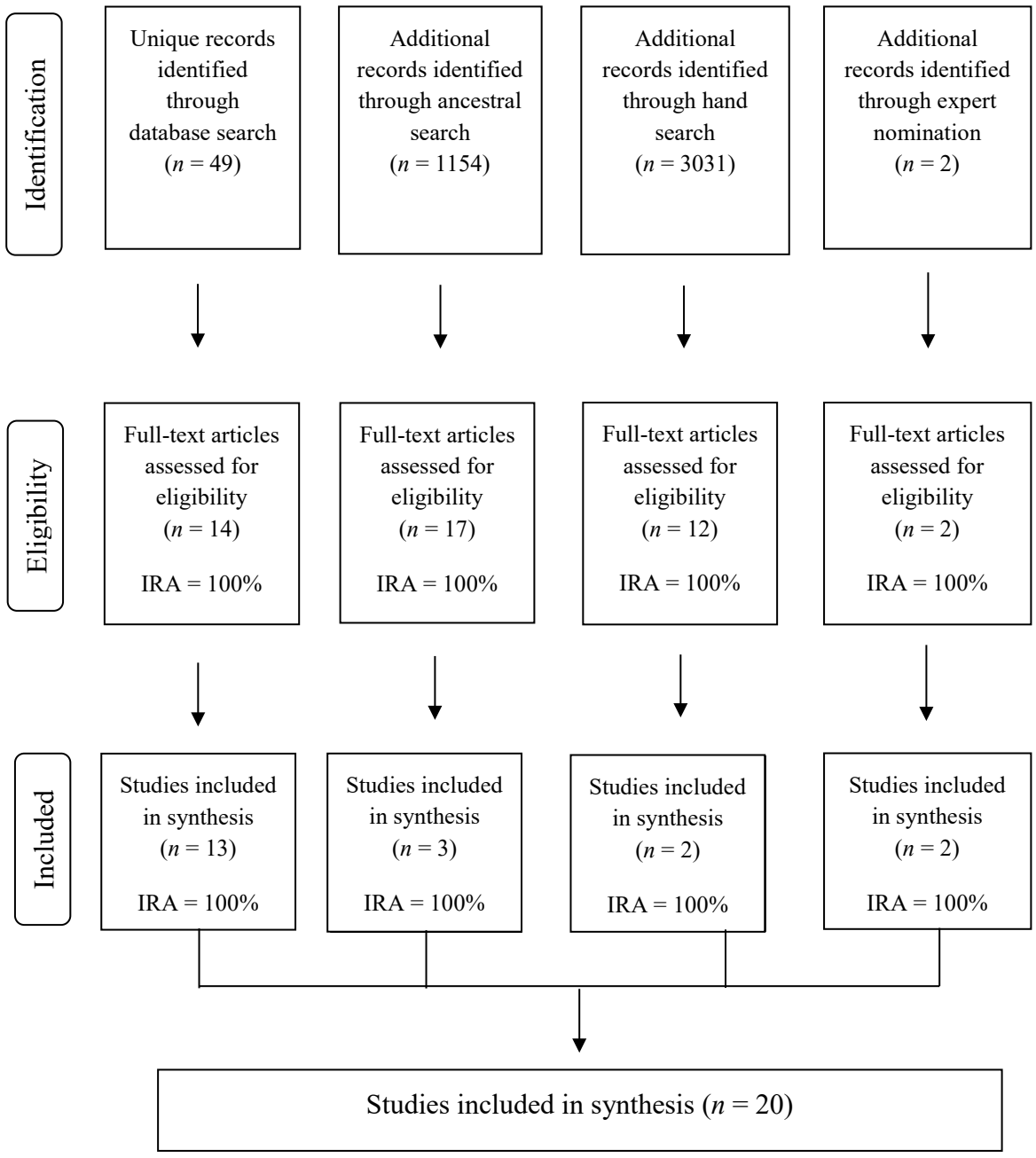
Finally, three researchers in the field of special education with expertise in the areas of

employment and/or VM were contacted via e-mail to inquire about studies that were completed but not yet published or were published and not identified during the search processes described above. The experts were provided with the inclusion criteria and list of included articles. Two experts responded they had no recommendations for additional studies. One expert responded with two articles published by herself (Van Laarhoven et al., 2015; Van Laarhoven, Kos, Weichle, Johnson, & Burgin, 2014). Both authors read the articles and concluded both met inclusion criteria. Figure 1 describes the study inclusion flowchart.

Inclusion Criteria

Studies must have used a single-subject or group comparison experimental design. Second, the independent variable must have been any type of VM. Packaged interventions or employment models were excluded. Third, the dependent variable must have been an employment skill related to job performance (e.g., task completion). Studies focused on job obtainment (e.g., job interviewing skills) or other employment outcomes (e.g., increased hours worked per week, wage increase) as the dependent variable were excluded. Fourth, participants must have been aged 14 years or older with a clinical (i.e., medical) ASD diagnosis and/or have been eligible for special education services under the autism category. Finally, only those articles published in peer-reviewed journal articles between 1987 (when the first VM study was published; Haring, Kennedy, Adams, & Pitts-Conway, 1987) and 2019 were included. Dissertations were excluded given they had not undergone the peer-review process. Thus, studies were included if they met the following criteria: (a) empirical study employing an experimental design, (b) independent variable is a VM intervention to improve job performance, (c) dependent variable of improved job performance, (d) at least one participant with ASD age 14 and older, (e) published in English between 1987-2019 in a peer-reviewed journal.

Figure 1. Study Inclusion Flow Chart



Note. Figure adapted from Moher, D., Liberatri, A., Tetzlaff, J., Altman, D. G., & The PRISMA Group (2009). Preferred reporting for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Med, 6,* e1000097. IRA= Interrater agreement.

Coding Procedures

Training. The second author was trained in quality indicator (QI) coding procedures by the first author using a quality indicator coding matrix (Lane, Common, Royer, & Muller, 2014; Royer, Lane, & Common, 2017) and coding matrix check for understanding found at www.ci3t.org. The second author also read several resources related to evaluating the methodological quality of experimental research (Gersten et al., 2005; Horner et al., 2005; Ledford, Lane, & Tate, 2018; Kennedy, 2005; Kratochwill et al., 2010; Kratochwill et al., 2013). Criterion for training was set for three consecutive articles coded with >85% interrater agreement (IRA). A consensus process for disagreements was established. The second author scored a mean of 94% (range 92.86-96.43%) on the three training articles prior to coding articles included in the meta-analysis.

Demographic coding. A coding database was created to synthesize the included literature. The following information was coded at the individual-level: (a) participant pseudonym, (b) gender, (c) age, (d) race or ethnicity, and (e) disability category. Participants without ASD in included studies were extracted and not included the analysis. The following information was coded at the study-level: (a) employment setting description, (b) type of employment experience (c) experimental design, (d) type of VM, and (f) dependent variable (i.e., job skill). The type of employment experience was operationalized using criteria from the Workforce Innovation and Opportunity Act (WIOA). Specifically, employment experiences were categorized as (1) simulated or school-based work experiences, (2) work-based learning, or (3) competitive integrated employment (CIE, see Table 1).

Table 1.

Employment Experiences Operational Definitions

Employment experience category	Definition	Example
Contrived or school-based experience	Employment experience that is contrived or arranged for purposes of a research study or takes place within a school setting	School enterprises such as recycling program or coffee shop; students working within the classroom or other locations within the school building (e.g., cafeteria)
Work-based learning	Employment experience that occurs within the community as a component of a secondary employment program	18-21 school program that incorporates community employment experiences (could be paid and/or for credit hours)
Competitive integrated employment	Employment experiences that occurs within the local labor market where the individual is earning a paycheck and interacting with co-workers without disabilities	Individual works at a setting typically found in the community (e.g., pet store, library)

Quality indicator coding. The database also included coding categories pertinent to the methodological quality of this body of literature. Specifically, eight QIs defined by CEC's (2014) *Standards for EBPs* were used and included: (1) context and setting, (2) participants, (3) intervention agent, (4) description of practice, (5) implementation fidelity, (6) internal validity, (7) outcome measures/dependent variables, and (h) data analysis. There were 28 components related to single-case research design and 24 components related to group design within the eight quality indicators. A weighted coding scheme developed by Lane, Kalberg, and Shepcaro (2009) was utilized to give credit if some components of the quality indicator were met but not all. Specifically, the sum of all components met was divided by the sum scored components. Studies were considered methodologically sound if 80% or more of the eight quality indicators were met. The first two authors independently coded all included articles according to the guidelines

described by CEC's (2014) *Standards for EBPs*. IRA across all studies was calculated by diving the number of QI component agreements by the number of component agreements plus disagreements multiplied by 100. The mean IRA across all studies was 93.38% (range 80.95-100%).

Methodological Quality Indicators

1.0 Context and setting. QI 1.0 included one component, QI 1.1 *Context and Setting,* and was considered met if the study provided a minimum of one detail regarding the setting or context where the study occurred.

2.0 Participants. QI 2.0 included two components. QI 2.1 *Participant Demographics* was met if participant demographic information relevant to the review, such as gender, age, or race/ethnicity was described. QI 2.2 *Participant Disability/Risk Status* was met if the disability or risk status of the participant and method for determining the disability status was described

3.0 Intervention agent. QI 3.0 included two components. QI 3.1 *Intervention Agent Role* was met if the authors described the role of the intervention agent. Indicator 3.2 *Intervention Agent Training* was met if the authors described specific training the intervention agent needed to implement the intervention.

4.0 Description of practice. QI 4.0 included two components. Indicator 4.1 *Intervention Procedures* was met if the authors provided detailed intervention procedures. Indicator 4.2 *Intervention Materials* was met if the authors described the materials used in the study.

5.0 Implementation fidelity. QI 5.0 included three components. QI 5.1 *Implementation Fidelity* was met if authors used a direct, reliable measure (e.g., checklist) to assess implementation fidelity in the study. QI 5.2 *Implementation Fidelity Measures* was met if authors reported implementation fidelity related to dosage using a direct, reliable measure.

Indicator 5.3 *Implementation Fidelity Dosage* was met if authors reported that implementation fidelity was assessed throughout all phases of the study and for each unit of analysis (e.g., interventionist, setting, participant).

6.0 Internal validity. QI 6.0 included nine components, three of which related to single-case design. Indicator 6.1 *Independent Variable Systematically Manipulated* was met if the authors systematically controlled the independent variable. Indicator 6.2 *Baseline Description* was met if the authors adequately described baseline conditions. Indicator 6.3 *No or Limited Access to the Intervention* was met if participants had no or extremely limited access to the intervention during baseline conditions. Indicator 6.5 *Three Demonstrations of Effect* was met if the design provided a minimum of three demonstrations of experimental effects at three different times. Indicator 6.6 *Baseline Phases* was met if the baseline phase included a minimum of three data points. Finally, Indicator 6.7 *Design Controls for Internal Validity* was met if the research design controlled for common threats to internal validity.

7.0 Outcome measures/dependent variables. QI 7.0 included four components relevant to single-case design and related to how the outcome measures were applied to analyze the effects of the practice. QI 7.1 *Outcomes are Socially Important* was considered met if the outcomes were socially valid for the participants. QI 7.2 *Dependent Variables* was met if the authors clearly defined and described how the dependent variables were measured. QI 7.3 *Study Reports Effects of the Intervention* was met if the authors reported the effects of the intervention on all measures of the outcome targeted by the review. QI 7.4 *Frequency and Timing Measures* was met if the frequency and timing of the outcome measures were appropriate. In most single-case research designs, this indicator was met if there were a minimum of three data points per

phase. Finally, QI 7.5 *Internal Reliability* was met if the authors provided evidence of adequate internal reliability, such as interobserver reliability.

8.0 Data analysis. QI 8.0 related to appropriate data analysis of the study and included one indicator relevant to single-case design. Indicator 8.2 *Study Provides Graph* was considered met if the authors provided a single-case design graph that represented all outcome data for all phases for each unit of analysis.

Meta-Analysis

Graphs of methodologically sound studies were examined for a potential functional relation and coded as having positive, mixed/neutral, or negative effects. Finally, the VM employment literature for individuals with ASD was classified as an EBP, potentially EBP, mixed evidence, insufficient evidence, or negative effects as using the criteria established by CEC. Specifically, five methodologically single-subject studies with positive effects with a minimum of 20 participants across all studies must be found for VM to be considered an EBP. IRA for this step was calculated by dividing the number of agreements by the total number of participant graphs analyzed multiplied by 100. Disagreements were resolved using a consensus process. IRA for visual analysis was 97.14%.

Studies that met 80% or more of QI standards using the weighted coding scheme described above were meta-analyzed to determine the magnitude of VM effects. Only two studies used group comparison designs and neither met the minimum 80% quality standard. Therefore, no group design studies were included in the meta-analysis. Eleven single case design studies were considered methodologically sound using the weighted coding scheme and were included in the meta-analysis.

Data extraction. Raw data from published single case design study graphs were extracted using PlotDigitizer (Rohatgi, 2017; Version 3.12). Graphs were imported to PlotDigitizer and *x* and *y* axes were calibrated. Each plotted data point for the first baseline and adjacent intervention conditions was identified and marked using the PlotDigitizer software. Multiple baseline or multiple probe designs resulted in extraction of potential effects across participants or behaviors according to the study. Alternating treatments designs resulted in extraction of potential effects according to different types of VM. Data sets were exported as a .csv file to an Excel spreadsheet following the digitizing procedure. Each data set was numbered and labeled according the author and publication year, resulting in 66 unique data sets.

Moderator variables. Moderating variables of interest were identified and extracted from each study. Age, gender, and disability category was coded at the participant-level. Employment setting, job skills targeted in the VM intervention, and type of VM used was coded at the study-level. The same employment categories described above were utilized: (1) contrived or school-based, (2) working-based learning, or (3) CIE. Job skills were categorized as task-oriented relevant to the employment setting or employment-related social skill. Finally, type of VM was categorized as point-of-view, traditional VM, video prompting, video self-modeling, or a combination of any two types of VM.

Tau-U calculation. Tau-U combines nonoverlap phases with trend from within the intervention phase and compares each data point in the A phase to data points in the adjacent B phase (Parker et al., 2011). Tau-U analysis yields a value between 0 and 1.0, with 0 to .20 indicating small magnitude of change, .20 to .60 indicating moderate magnitude of change, and .61 to .80 indicating large magnitude of change, and .81 or higher indicating very large

magnitude of change (Vannest & Ninci, 2015). Individual phase contrasts were aggregated to obtain an omnibus effect size. Tau-U was calculated using software developed by Davis (2012).

Comparing effects. Analysis of moderator variables was conducted following standard practice in analyzing categorical variables. Moderator variables with two groups were analyzed using the Wilcoxon two-sample test (Wilcoxon, 1945). The Wilcoxon test was used for gender and job skill variables. Moderator variables with three or more groups were analyzed with the Kruskal-Wallis one-way analysis of variance (Kruskal & Wallis, 1952). The Kruskal-Wallis test was used for the disability category and employment setting variables. If results showed significant differences between groups, a Dunn post-hoc test (Dunn, 1964) was used to evaluate the significance between groups. The Dunn post-hoc test is beneficial when data do not meet normal distribution assumptions or do not have equal sample sizes.

Results

Participant Characteristics

Table 2 describes participant demographic information organized by study. A total of twenty articles with 61 participants were included in the systematic review prior to meta-analysis. Fifty-four of the participants were male and seven were female. Mean age of participants was 18 years (range 13-28). Of studies that reported race/ethnicity, 17 participants were White, two participants were Asian, two participants were Black, one participant was Hispanic, and one participant was Native American. Race/ethnicity of 38 participants was not reported. Regarding disability category, 34 participants (56%) were identified as having ASD alone, and 13 participants (23%) were identified as having ASD and intellectual disability. Fourteen participants (18%) were identified as having a comorbid diagnosis (i.e., ASD and anxiety, bipolar disorder, learning disability, specific language impairment).

Table 2.

Participant Demographics

Study	Pseudonym	Gender	Age	Race	Disability Category
Allen et al. (2012)	Emma	F	16	White	ASD & moderate ID
	Ned	M	18	White	ASD & mild ID
	Trace	M	17	White	ASD, moderate ID, & seizure disorder
Allen et al. (2010a)	Al	M	17	NR	AS & PDD-NOS
	Blake	M	22	NR	LD & PDD-NOS
	Gary	M	19	NR	PDD-NOS
Allen et al. (2010b)	Andy	M	17	NR	ASD & visual impairments
	Dan	M	25	NR	AS and SLI
	Ron	M	16	NR	AS & visual impairments
	Tim	M	18	NR	AS, ASD, PDD-NOS, & TS
Alexander et al. (2013)	Adam	M	18	NR	ASD
	Catalina	F	17	NR	ASD
	Clarence	M	17	NR	ASD
	Diego	M	15	NR	ASD
	Eli	M	17	NR	ASD
	Jason	M	17	NR	ASD
	Roger	M	17	NR	ASD
Bennett et al. (2013)	Chandler	M	15	Black	ASD
	Chris	M	17	White	ASD
	Jackson	M	18	White	ASD
	Nick	M	13	White	ASD
	Sal	M	14	Hispanic	ASD
Bereznak et al. (2012)	Aaron	M	18	Asian	ASD, mild ID, & SLI
	Hugh	M	15	White	ASD & SLI
	Mike	M	15	Black	ASD & SLI
Bross et al. (2018)	Solomon	M	18	White	AS

Burke et al. (2013)	Dan	M	28	White	AS
	Ric	M	19	White	AS & severe visual impairment
	Tom	M	21	White	ADHD, ASD, OCD, & TS
	Zeke	M	22	Asian	AS
Cihak & Schrader (2008)	Alan	M	20	NR	ASD & severe ID
	Phil	M	17	NR	ASD & severe ID
	Ronald	M	16	NR	ASD & moderate ID
	Ryan	M	21	NR	ASD & moderate ID
Cullen et al. (2017)	Perry	M	22	White	ASD
English et al. (2017)	Larry	M	23	NR	AS & social anxiety
	Nick	M	23	NR	Anxiety, ASD, epilepsy, & selective mutism
	Perry	M	18	NR	AS
Goh & Bambara (2013)	Maria	F	28	NR	ASD & ID
Kellems & Morningstar (2012)	Alex	M	22	NR	ASD
	Kyle	M	22	NR	ASD
	Sam	M	20	NR	AS
	Tom	M	22	NR	AS
Mackey & Nelson (2015)	Jack	M	19	White	ASD
	John	M	19	White	ASD
Rausa, et al. (2016)	Mark	M	23	NR	ASD
Van Laarhoven, et al. (2015)	Anna	F	17	NR	ADD, ASD, bi-polar disorder, & OCD
	Gary	M	17	NR	ASD
	Nancy	F	15	NR	ASD
	Nate	M	19	NR	ASD, Down syndrome
Van Laarhoven, et al. (2014)	Ginger	F	16	NR	ASD & ID
	Millicent	F	16	NR	ASD & ID
Van Laarhoven, et al. (2007)	Devon	M	18	NR	AS

Van Laarhoven, et al. (2012)	Artie	M	17	NR	ASD
	Manny	M	15	NR	ASD
	Nate	M	16	NR	ASD & mild ID
	Neville	M	16	NR	ASD, Down syndrome, & moderate ID
Yakubova & Taber-Doughty (2017)	David	M	19	White	ASD
	Jack	M	20	White	ASD
	Mark	M	19	Nat Amer	ASD
	Richard	M	17	White	ASD

Note. ADHD = attention deficit hyperactivity disorder; AS = Asperger syndrome; ASD = autism spectrum disorder; ID = intellectual disability; F = female; M = male; Nat Amer = Native American; NR = not reported; OCD = obsessive compulsive disorder; PDD-NOS = pervasive developmental disorder- not otherwise specified; SLI = specific language impairment; TS = Tourette syndrome.

Employment Settings and Job Tasks

Table 3 displays the employment settings and job tasks for all included studies. Twelve studies occurred in contrived or school-based experiences. Of these 12 studies, four were artificial employment experiences created solely for purposes of the research study (Allen et al., 2012; Allen et al., 2010a; Allen et al, 2010b; Burke et al., 2013). Nine studies occurred in school settings such as self-contained special education classrooms (Bereznak et al., 2012), teacher's staff room (Cihak & Schrader, 2008; Van Laarhoven et al., 2015), school hallways (Van Laarhoven et al., 2012), or the school kitchen (Yakubova & Taber-Doughty, 2017). Seven studies occurred in work-based learning experiences in the community (Cullen et al., 2017; English et al., 2017; Goh & Bambara, 2013; Kellems & Morningstar, 2012; Mackey & Nelson, 2015; Rausa et al., 2016; Van Laarhoven, Winiarski, Blood, & Chan, 2012). Two of the 20 studies occurred in the context of competitive employment. Two young adults worked at restaurants for CIE supported by a school-based program for 18 to 21-year-old students (Van Laarhoven, Laarhoven-Myers, & Zurita, 2007). One young adult with ASD worked at a retail store for CIE with no support from a school or adult agency (Bross et al., 2018).

The majority of studies focused on job task acquisition or job performance skills specific to the employment setting such as shipping items (Burke et al., 2013), gardening tasks (English et al., 2017), or food preparation (Van Laarhoven et al., 2007). For example, a young adult who worked at a pet store straightened shelves of boxes and bags, organized fish food, and cleaned shelves of large items (Cullen et al., 2017). Similarly, a young adult who worked at a bowling alley cleaned the public restrooms, vacuumed, and cleaned the sidewalk in front of the bowling alley (Kellems & Morningstar, 2012). Three studies focused on increasing the number of

Table 3.

Settings, Type of Employment, and Job Skill Outcomes of Included Studies

Study	Setting	Type of Employment Experience	Job Skill Outcomes
Allen et al. (2012)	Factory and warehouse	Contrived experience by researchers	Movements and actions of air-inflated mascot
Allen et al. (2010a)	Retail warehouse	Contrived experience by researchers	Movements and actions of air-inflated mascot
Allen et al. (2010b)	Retail warehouse	Contrived experience by researchers	Movements and actions of the air-inflated mascot
Alexander et al. (2013)	Conference room and high school classroom	School-based experience	Sorting mail
Bennett et al. (2013)	High school teacher workroom	School-based experience	Clerical tasks (e.g., photocopying, making labels, sending a fax)
Bereznak et al. (2012)	High school teacher workroom and living room area	School-based experience	Number of steps completed correctly to make photocopies
Bross et al. (2018)	Retail discount store	CIE	Verbalization of customer service skills
Burke et al. (2013)	Manufacturing and shipping warehouse	Contrived experience by researchers	Percent of steps completed correctly on a shipping task
Cihak & Schrader (2008)	Teacher workroom and/or vocational lab in high school	School-based experience	Number of steps completed correctly to prepare family packs or first aid kids, photocopy, or send a fax
Cullen et al. (2017)	Pet store	Integrated employment internships (unpaid)	Accuracy of task completion (e.g., straightening shelves, cleaning counters)

English et al. (2017)	Garden area of non-profit social enterprise	Non-profit social enterprise (unpaid)	Number of steps completed for gardening tasks (e.g., weeding, planning)
Goh & Bambara (2013)	Thrift and department store	Supported employment (unpaid)	Percent of steps performed correctly on individual job skills
Kellems & Morningstar (2012)	Community employment settings (e.g., bowling alley, community center)	Work-based learning	Percent of steps completed correctly for each employment
Mackey & Nelson (2015)	Food warehouse and computer resale non-profit organizations	Work-based learning	Active engagement, decision making, response to others, hygiene, and transitioning
Rausa et al. (2016)	EdAble Flowers non-profit organizations	Non-profit social enterprise	Percent of response criteria completed correctly for answering a phone
Van Laarhoven, et al. (2015)	Vocational classroom, conference room, and staff room of high school	School-based experience	Percent of correct responses to cleaning and organization job tasks
Van Laarhoven, et al. (2014)	Hallways and doorways of high school classrooms	School-based experience	Percent of social skill used correctly
Van Laarhoven, et al. (2007)	Red Robin restaurant	CIE supported with secondary program	Number of correct responses for restaurant tasks (e.g., rolling silverware, food preparation)
Van Laarhoven, et al. (2012)	Buffalo Wild Wing's restaurant and high school classroom	School-based experience and work-based learning	Number of correct responses and prompt level for steps of skill sequence
Yakubova & Taber-Doughty (2017)	Classroom and kitchen areas of high school	School-based experience	Steps for solving problems during vocational tasks

Note. CIE = competitive integrated employment

movements and actions demonstrated by young adults wearing an air-inflated mascot (Allen et al., 2010a; Allen et al., 2010b; Allen et al., 2012). Four studies focused on teaching clerical skills such as sorting mail, making photocopies, or sending a fax (Alexander et al., 2013; Bennett et al., 2013; Bereznak et al., 2012; Cihak & Schrader, 2008). One study focused on solving problems during vocational tasks (Yakubova & Taber-Doughty, 2017).

Four of the 20 included studies focused on some component of employment-related social skills. For example, secondary students with ASD delivered passes to teachers within the school building and social skills evaluated were gaining attention of the teacher, making eye contact with the teacher, smiling, using an appropriate greeting, saying "thank you," and ending the conversation (Van Laarhoven et al., 2014). Similarly, a young adult with ASD used VM to acquire telephone skills such as answering the phone with a professional greeting, taking customer orders, and ending the phone call (Rausa et al., 2015). Appropriate interactions with others was one target behavior for twins with ASD participating in work-based learning experiences at a warehouse or computer resale store (Mackey & Nelson, 2015). Finally, interactions with customers were the targeted job tasks for one young adult with ASD (Bross et al., 2018).

Quality Indicator Coding Results

1.0 Context and setting. All studies met *QI 1.1 Context and Setting* (100%).

2.0 Participants. All studies articles met *QI 2.1 Participant Demographics* (100%) and 16 out of 20 articles (80%) met *QI 2.2 Participant Disability/Risk Status*.

3.0 Intervention agent. Sixteen articles met *QI 3.1 Intervention* Agent *Role* (80%). Four articles met *QI 3.2 Intervention Agent Training* (20%).

4.0 Description of practice. All articles met *QI 4.1 Intervention Procedures* (100%). Nineteen articles met *QI 4.2 Intervention Materials* (95%).

5.0 Implementation fidelity. Twelve articles met *QI 5.1 Implementation Fidelity* (60%). Twelve articles also met *QI 5.2 Implementation Fidelity Measures* (60%). Eleven articles met *QI 5.3 Implementation Fidelity Dosage* (55%).

6.0 Internal validity. Twelve studies met *QI 6.1 Independent variable systematically manipulated* (60%). All studies met *6.2 Baseline description* and *6.3 No or limited access to the intervention*. The two group design studies met *6.4 Describes assignment to groups*. All eighteen single case design studies (100%) met *6.5 Three demonstrations of experimental effects at three different times*. Seventeen of the eighteen single case design studies (94%) met *6.6 Baseline phases include at least three data points*. All single case design studies (100%) met *6.7 Design controls for threats to internal validity*. The two group designs both met *6.8 Attrition is low across groups* (100%) and *6.9 Differential attrition is low* (100%).

7.0 Outcome measures/dependent variables. All twenty studies met *7.1 Outcomes are socially important* (100%), *7.2 Study clearly defines dependent variables* (100%), and *7.3 Study reports effects of* the intervention (100%). Nineteen articles met *7.4 Frequency and timing outcome measures are appropriate* (95%) and *7.5 Study provides adequate internal reliability* (95%). The two group design studies met *7.6 Study provides evidence of validity* (100%).

8.0 Data analysis. The two group design studies met *8.1 Data analysis techniques to compare two or more groups* (100%). All eighteen of the single case design studies met *8.2 Study provides single-subject* graph (100%). Finally, the two group design studies met *8.2 Study reports one or more appropriate effect size statistic* (100%). Table 4 presents all QI coding results.

Table 4. *Summary of Quality Indicator Coding*

	1.1	2.1	2.2	3.1	3.2	4.1	4.2	5.1	5.2	5.3	6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9	7.1	7.2	7.3	7.4	7.5	7.6	8.1	8.2	8.3
Allen et al. (2012)														NA				NA	NA						NA	NA		NA
Allen et al. (2010a)										NA				NA				NA	NA						NA	NA		NA
Allen et al. (2010b)										NA				NA				NA	NA						NA	NA		NA
Alexander et al. (2013)														NA				NA	NA						NA	NA		NA
Bennet et al. (2013)														NA				NA	NA						NA	NA		NA
Bereznak et al. (2012)														NA				NA	NA						NA	NA		NA
Bross et al. (2018)														NA				NA	NA						NA	NA		NA
Burke et al. (2013)										NA				NA				NA	NA						NA	NA		NA
Cihak & Schrader (2008)														NA				NA	NA						NA	NA		NA
Cullen et al. (2017)														NA				NA	NA						NA	NA		NA
English et al. (2017)										NA				NA				NA	NA						NA	NA		NA
Goh & Bambara (2013)														NA				NA	NA						NA	NA		NA
Kellems & Morningstar (2012)														NA				NA	NA						NA	NA		NA
Mackey & Nelson (2015)										NA				NA				NA	NA						NA	NA		NA
Rausa et al. (2015)										NA				NA				NA	NA						NA	NA		NA
Van Laarhoven, et al. (2015)															NA	NA	NA										NA	
Van Laarhoven, et al. (2014)														NA				NA	NA						NA	NA		NA
Van Laarhoven, et al. (2012)														NA				NA	NA						NA	NA		NA
Van Laarhoven, et al. (2012)															NA	NA	NA										NA	
Yakubova & Taber-Doughty (2017)														NA				NA	NA						NA	NA		NA

Note. NA = Not applicable; Shaded = Quality Indicator met; Unshaded = Quality Indicator not met

Synthesis and Magnitude of Change Results

Eleven studies were classified as methodologically sound according to the 80% weighted criterion (Lane et al., 2009). All studies used single case design methodology. The weighted totals for these studies ranged from 7.17 to 8.0 out of eight QIs. One study met all eight QIs (Bereznak et al., 2012). Methodologically sound studies with a minimum of three participants were visually analyzed independently by two authors for having positive, neutral or mixed, or negative effects. Five studies were excluded from analysis at this step due to only one or two participants with ASD (Bross et al., 2018; Cullen et al., 2017; Goh & Bambara, 2013; Van Laarhoven et al., 2014; Van Laarhoven et al., 2012). One study with seven participants had neutral or mixed effects (Alexander et al., 2013). The remaining five studies with a minimum of three participants were categorized as having positive effects (Bennet et al., 2013; Bereznak et al., 2012; Cihak & Schrader, 2008; Kellems & Morningstar, 2012; Yakubova & Taber-Doughty, 2017). Across these five methodologically sound single-case studies, 20 participants with ASD were included. Therefore, VM for improving job skills of individuals with ASD met classification as an EBP according to CEC's (2014) *Standards for EBPs*.

Data from the 11 methodologically-sound studies were included in the magnitude of change analysis. Across these 11 studies, 66 separate effect sizes from 33 participants was analyzed. Omnibus Tau-U across all VM employment studies was 0.91 (CI_{95} = .84-.97). The Wilcoxon two-sample test revealed statistically higher effects for males ($z = 78$, $p < .0001$), but there were only four females in the sample. The Kruskal-Wallis test revealed no statistically significant differences between types of employment experiences (Chi-Square = 1.62, $p = 0.44$). The Wilcoxon two-sample test revealed there were no statistically significant differences

between types of job skills ($z = 177$, $p = .06$). The Kruskal-Wallis test for disability category indicated a significant effect (Chi-Square = 19.64, $p < .0001$). Dunn post-hoc analysis was conducted and revealed a significant difference between ASD only and ASD with intellectual disability. No other pairwise comparisons were significant.

Discussion

The purpose of this meta-analysis was to evaluate the VM literature on job skills for individuals with ASD. Employment outcomes of transition-age youth with ASD may potentially be improved by identifying effective interventions in CIE settings. Video modeling studies were evaluated according to type of employment experiences and job skills targeted. In addition, the CEC's (2014) *Standards in EBPs* were applied to evaluate the methodological rigor of included studies prior to meta-analysis using an 80% weighted criterion (Lane et al., 2009). Studies categorized as methodologically-sound were meta-analyzed to obtain Tau-U (Parker & Vannest, 2014).

Regarding the first research question, findings indicated VM studies primarily occurred in contrived experiences arranged by researchers or school-based experiences where participants were unpaid and/or working alongside other individuals with disabilities. Specifically, 12 studies (60%) occurred in contrived or school-based employment settings. Six studies (30%) occurred in work-based learning or other nonpaid employment experiences (e.g., internships, non-profit enterprises). Only two studies (10%) occurred in CIE settings. Non-competitive settings may contribute to the positive effects associated with VM to teach job skills in the included studies. For example, personnel in school settings likely have histories of reinforcement with their students (Partin, Robertson, Maggin, Oliver, & Wehby, 2009; Skinner, 1965) that are not usually present in CIE settings. Special education teachers and job coaches likely have knowledge and skills about how to effectively teach and support with individuals with ASD. Conversely, co-

workers, employers, and supervisors in CIE settings may have limited knowledge and skills to ensure successful employment experiences for individuals ASD. In addition, job skills required in CIE settings may be more novel, difficult, or complex compared to job skills in contrived or school-based settings. For example, contrived or school-based settings may require repetitious job tasks and routines conducive to skill mastery and efficiency. However, workplace expectations and demands can quickly change in CIE settings based on a variety of factors (e.g., supervisor expectations, customer demands). CIE experiences present unique challenges that may diminish VM effects. Unfortunately, the limited studies in CIE contexts prevents conclusion about whether and to what extent VM is effective in CIE settings.

Regarding the second research question, the examined literature revealed VM interventions focused primarily on improving job skills specific to the employment setting rather than employment-related social skills. Specifically, 16 of the 20 included studies (80%) focused on task acquisition, and four studies (20%) focused on some form of employment-related social skills. The included studies focused primarily on narrow job skills, such as cleaning, clerical tasks, gardening, and performing in air-inflated mascots. The results do not indicate whether VM improves service-oriented job skills (e.g., improving social skills, customer interactions, problem solving, etcetera). This is concerning because the social demands of workplace environments likely impact employment outcomes for individuals with ASD (Chen, Leader, Sung, & Leahy, 2015; Lee & Carter, 2012). Competitive experiences also present unique social communication challenges that can alter the effectiveness of VM. For example, teachers and job coaches in school-based experiences can provide immediate corrective feedback to support social communication skills and repair communication breakdowns (i.e., social problem solving). In addition, individuals in school settings (e.g., teachers, paraprofessionals, administrators, other students) are likely aware of the individual's disability-related needs and, therefore, are more

likely to adjust supports for social interactions. On the other hand, customers in CIE settings are likely unaware of the individual's disability status and may be less accommodating and understanding of miscommunications or quality of customer service received. Similarly, social communication errors in contrived settings are unlikely to result in permanent consequences such as job termination, damaged relationships, and stigmatization. Such consequences are more likely in CIE settings. Therefore, many individuals with ASD will likely need explicit instruction to learn employment-related social skills in CIE settings. Importantly, VM for social communication skills in CIE settings may not produce the same positive effects as VM focused on other employment skills taught in more supportive environments.

Regarding the third research question, a total of 11 studies were considered methodologically sound using an 80% weighted criterion (Lane et al., 2009). Of these 11 articles, five studies were categorized as having positive effects and a minimum of three total participants according to the CEC's (2014) *Standards for EBPs*. Bennett, Gutierrez, and Honsberger (2013) compared video prompting with and without voice-over narration to increase the clerical skills of five secondary students with ASD in the teacher workroom of a high school. Bereznak et al. (2012) taught vocational and daily living skills using video prompting via an iPhone to three secondary students with ASD in a teacher workroom. Cihak and Schrader (2018) compared video self-modeling and traditional VM to teach clerical skills (e.g., making copies, sending a fax, and preparing first aid kits) to four secondary students with ASD in the teacher workroom or vocational lab of a high school. Kellems and Morningstar (2012) used VM delivered through iPods to teach jobs tasks relevant to community employment settings of four students participating in work-based learning experiences. Finally, Yakubova and Taber-Doughty (2017) used point-of-view VM to teach vocational problem-solving skills to four secondary students with ASD in classroom and kitchen areas of a high school. As a result of these five

methodologically sound studies with a minimum of 20 participants across all studies, VM to improve job skills of individuals with ASD was classified as an EBP according to CEC's (2014) *Standards for EBPs* using a weighted criterion (Lane et al., 2009). This finding was consistent with previous reviews of the literature that found sufficient evidence to qualify VM as an EBP (Bellini & Akullian; Qi et al., 2018; Wong et al., 2015).

Finally, regarding the fourth research question, the Tau-U revealed an omnibus score of 0.91. This finding suggests VM is an overall effective intervention to support job skill acquisition for individuals with ASD. Analysis of moderator variables revealed two statistically significant difference between groups. First, a difference in intervention effects was observed based on participant gender. However, the majority of participants included in the analysis were male and only four females were included. This suggests the difference is a product of sampling bias. Females are underrepresented in ASD intervention research (Halladay et al., 2015; Lai, Lombardo, Auyeung, Chakrabarti, & Baron-Cohen, 2015), so this bias is not surprising. However, it is not clear that VM would be more beneficial for males with ASD than females with ASD. Secondly, a statistically significant difference between individuals with ASD only and ASD with intellectual disability was found. This suggests VM may be more effective for individuals with ASD without comorbid intellectual disability and is consistent with findings that comorbidity reduces the likelihood of being competitively employed (Farley et al., 2009; Holwerda, van der Klink, Groothoff, & Brouwer, 2012). There were no significant differences according to different types of employment experiences. However, very few studies occurred in CIE setting. Given there were also no significant differences according to job tasks, it remains unclear whether VM will produce similar effects on employment-related social skills in CIE settings.

Limitations

There are several limitations to this meta-analysis. First, CEC's (2014) *Standards for EBPs* are common but not universally accepted for evaluating the methodological quality of a body of literature. Other organizations (e.g., Cochrane Collaboration; WWC) use different standards for evaluating methodological quality of experimental research to inform conclusions about a particular practice. For example, the WWC design standards for single case research design categorizes studies as *Meets Standards*, *Meets Standards with Reservations*, and *Does Not Meet Standards* (Kratochwill et al., 2010). Although the *Standards for EBPs* drew on the WWC Standards to develop their guidelines, different approaches to classify EBPs can vary slightly. In addition, this study used a weighted coding scheme for evaluating methodological rigor, which is a more liberal and relatively less common procedural variation (Common et al., 2018; Ennis, Royer, Lane, & Griffith, 2017; Royer, Lane, Dunlap, & Ennis, 2018). Only studies that met QI standards using the weighted coding scheme were included in the meta-analysis. Other researchers who use a more conservative coding scheme likely will obtain different results.

An additional limitation relates to using only Tau-U to calculate magnitude of change as well as the moderator variables used for analysis. As described, there are several emerging methods for estimating magnitude of changes in responding for single-case research design studies. Meta-analyses of VM that use different methods likely will produce different results, many of which may be difficult to interpret. Accordingly, future studies might investigate the validity of emerging metrices for estimating magnitude of changes in responding, how to interpret the results, and what theoretical implications and considerations are critical for advancing this methodological line of research. Moderator variables for this study were selected based on the frequency of information reported in the included studies. In addition, gender,

disability category, employment setting, and target job skills are important variables to consider when researching employment outcomes for individuals with ASD.

Implications for Practice and Research

Results indicated VM is an EBP for improving job skills of individuals with ASD. This finding has implications for stakeholders who hire and support employees with ASD. Importantly, VM can and should be considered a reasonable workplace accommodation as described in the Americans with Disabilities Act (ADA, 1990). For example, an employee with ASD can watch a video before or during a work shift given video models are typically no more than 2-3 min in duration. Video-based interventions can also promote autonomy at work because employees can access videos independently. Consequently, reliance on job coaches or other support personnel may be decreased. This is noteworthy because employers have expressed concern regarding employees with disabilities working independently and their overall productivity (Ju, Roberts, & Zhang, 2013). Students participating in work-based learning experiences may also experience increased autonomy through use of VM.

Video-based interventions may be more cost-effective than other employment services, such as job coaching. Adults with ASD are one of the costliest disability groups for vocational rehabilitation (VR) organizations to serve (Cimera & Cowen, 2009). Additional research is needed to develop solutions to increase the cost-efficiency of adult services, including how to best support existing service providers in meeting the needs of employees with ASD (Cimera & Cowen, 2009; Müller et al., 2003). Video modeling could potentially supplement or enhance existing training methods used by job coaches, employers, VR counselors, and other stakeholders. For example, relevant stakeholders could use videos to support a larger number of employees with ASD in a relatively quick and cost-efficient manner. Other individuals in the employment setting, such as co-workers, could also watch videos with their fellow employees

with ASD as a natural support. Finally, edited videos may be used repeatedly to ensure standard performance (Ayres & Langone, 2005) and can be used with other employees regardless of disability status. Video modeling can also be combined with other EBPs for individuals with ASD in employment settings, such as scripting, self-management, reinforcement, task analyses, and/or visual supports.

This review reveals gaps in knowledge about how best to employ and support individuals with ASD across a broad range of professions. Perhaps most concerning is the majority of VM employment studies occurred in the context of contrived or school-based employment experiences rather than CIE within the local labor market. The importance of paid, community-based employment for individuals with disabilities, including ASD, should not be underestimated (Wehman, Revell, & Brooke, 2003). The effect size analysis revealed large effects for VM, which is promising. However, there appears relatively little research focused on CIE contexts and therefore remains unclear whether VM can enhance CIE experiences of individuals with ASD. Furthermore, VM employment research for individuals with ASD appears to focus on general job performance rather than employment-related social skills. As a result, additional research is needed to understand whether VM can support the social and communication challenges associated with ASD in workplace environments.

Video modeling researchers have also focused on job tasks unmatched to personal interests, which likely contributes to unsatisfactory employment outcomes. Conversely, individuals with ASD can be successfully employed in a variety of jobs matched to their strengths, preferences, and interests. As a result, additional research is needed in the context of CIE across diverse jobs, including jobs that require social communication skills and face-to-face interactions with others. For example, individuals with ASD employed in customer service positions may benefit from VM as an on-the-job support to interact effectively with customers.

Furthermore, additional research is needed to examine how individuals naturally found in the employment settings (e.g., co-workers, job coaches, supervisors) can best support employees with ASD.

Conclusion

Findings from this meta-analysis indicate the majority of VM research to improve job skills of individuals with ASD occurs in contrived or school-based settings and not CIE settings. Although early work experiences are one predictor of postschool outcomes (Test et al., 2009), additional research is needed in CIE settings within the local labor market. The majority of VM research also focused primarily on general job performance and task acquisition rather than employment-related social skills. Video modeling met CEC's (2014) *Standards for EBPs* criteria for an EBP, and the Tau-U indicated very large effects. However, it remains unclear whether VM produces similar positive effects for employment-related social skills in CIE settings. Additional research focused on social communication skills of individuals with ASD in CIE settings appears warranted.

Chapter III: Method

The purpose of this study was to examine the efficacy of a VM intervention in the context of CIE or work-based learning experiences of young adults with ASD. Specifically, the VM intervention was used to enhance customer service skills of young adults with ASD employed at jobs or participating in employment experiences that required direct interactions with customers or other individuals found in the employment setting. A secondary purpose was to replicate Bross et al. (2018) with additional participants and incorporate generalization and maintenance conditions. A multiple baseline across behaviors design was utilized for all participants. Dependent variables were customer service phrases (i.e., greeting, service, and closing phrases) contextualized to the job duties of the employment setting. Co-workers, job coaches, and/or supervisors applied the VM intervention during the generalization condition of the study. Maintenance was assessed at two and four-weeks after the generalization condition ended. An Observer Impression Scale was used to measure the quality of delivery of the customer service phrases in the categories of tone, timing, body language, and appropriate statements. Social validity of the VM intervention was assessed via a questionnaire at the conclusion of the study for young adults and their co-workers, job coaches, and/or supervisors. The following research questions guided this study:

1. To what extent does a VM intervention increase the verbalization of job-specific customer service phrases for young adults with ASD in community employment settings?
2. To what extent does a VM intervention improve the quality of delivery of customer service phrases for young adults with ASD as measured on an Observer Impression Scale in the categories of tone, timing, body language, and appropriate statements?

3. To what extent do co-workers, job coaches, and/or supervisors implement a VM intervention with a fidelity for young adults with ASD as a means to generalize to natural intervention agents?
4. Following VM intervention cessation, to what extent do young adults with ASD maintain verbalization of customer service phrases at two and four weeks?
5. What is the social validity of a VM intervention to increase the customer service skills of young adults with ASD as reported by young adults and their co-workers, job coaches, and/or supervisors?

Recruitment, Consent Process, and Inclusion Criteria

This study was approved by the University of Kansas Human Research Protection Program or Institutional Review Board. Individuals with ASD were recruited from adult agencies, non-profit organizations, and school districts. Informational flyers about the study (see Appendix A) were distributed via each recruitment site's regular method of communication with families (e.g., monthly newsletter, e-mail). Recruitment meetings were also held with interested leaders from the organizations (e.g., employment specialists, special education process coordinators) who distributed the informational flyers within their organization. If a young adult or family expressed interest in participating, the primary researcher first spoke to the potential participant on the phone and then requested an in-person meeting to obtain signed consent. Young adults were first recruited and, when consent was obtained, the prospective participant's employer or supervisor was contacted to inform him/her about the study and obtain consent to conduct data collection sessions in the employment settings. Consent from one or more co-workers or job coaches, if available, was then obtained. Co-workers, job coaches, or supervisors could serve as intervention agents in the final generalization condition or video models featured in the videos. Individuals who agreed to serve as video models provided signed consent to be

filmed. Young adult participants earned a $100 stipend for their participation in the study. Appendix B includes all consent forms used in the study and assent procedures.

Young adults were invited to participate if they were (1) age 18 years or older; (2) diagnosed with ASD as confirmed by educational or medical documents (e.g., Individualized Education Program [IEP], psychologist report); (3) used speech as the primary method of communication; (4) currently employed or participating in employment experiences in a community-based customer service position; (5) already disclosed or were willing to disclose their disability to their current employer; and (6) exhibited employment support needs related to customer service skill acquisition as confirmed by in-vivo behavioral observations conducted by the primary researcher during recruitment. Participants with ASD had a clinical (i.e., medical) diagnosis or were eligible for special education services due to autism as evidenced by educational records (e.g., IEP, eligibility team determination) in accordance with state law. Individuals diagnosed with autistic disorder, Asperger syndrome, pervasive developmental disorder, pervasive developmental disorder-not otherwise specified (PDD-NOS), or who were receiving special education services due to autism when they completed high school were eligible. Individuals with comorbid disorders (e.g., intellectual disability, anxiety) were eligible unless the secondary disorder required ongoing treatment that affected participation (e.g., inconsistent work attendance due to frequent medical appointments).

Employment settings where the eligible participants worked had to meet the following criteria: (1) the employment setting was a setting typically found in the community where the participant lived; (2) job tasks required direct customer service interactions at least eight times per hour (to ensure sufficient number of opportunities to respond to the VM intervention); and (3) the employer or supervisor provided signed consent and agreed for data collection sessions to occur during the participant's regularly scheduled work shifts. Preferred settings were

competitive integrated employment (CIE) settings as defined by the Workforce Innovation and Opportunity Act (WIOA). Participants placed in internship, job skills training program, volunteer experience, and work-based learning experience settings were eligible if the above criteria were met. School-based employment experiences where a young adult worked in a school setting (e.g., coffee shop, recycling program, classroom tasks) were not eligible because instruction did not occur within the community. Sheltered workshop or other separate settings not typically found in the community according to the WIOA setting definition were also not eligible.

Participants and Settings

Five young adults with ASD, ages 18-26, at four different employment settings participated in the study. All participants provided signed consent, or their parent/guardian provided signed consent and they participated in the assent process. Consented young adult participants and their parent/guardians completed two standardized assessments for participant description purposes: (1) the Behavior Rating Inventory of Executive Function (BRIEF; Gioia, Isquith, Guy, & Kenworthy, 2000) or BRIEF-Adult version (BRIEF-A; Roth, Isquith, & Gioia, 2005), and the (2) Social Responsiveness Scale 2nd Edition (SRS-2; Constantino & Gruber, 2012). Table 5 provides a summary of the standardized assessment results for all participants, and Appendix C provides the complete assessment results.

Hank. Hank was a 19-year-old White male with ASD who was competitively employed at an amusement park. Hank graduated from high school with a regular diploma in 2018 and lived at home with his mother. Hank's eligibility was confirmed via his three-year re-evaluation conducted in 2014 as part of special education services received at a public high school. His re-evaluation reported a primary diagnosis of ASD and secondary diagnoses of attention deficit hyperactivity disorder (ADHD) and mild cerebral palsy. Hank attended general education classes

Table 5.

Summary of Standardized Assessment Results

Pseudonym	Informant Rater	BRIEF-A Self	BRIEF-A Informant	SRS-2 Adult Self-Score and Interpretation	SRS-2 Adult Informant	SRS-2 Informant
Hank	Mother	85%	87%	59 Normal limits	63 Mild range	–
Stacey	Father	19%	99%	56 Normal limits	82 Severe range	–
Cole	Father	65%	69%	49 Normal limits	57 Normal limits	–
Andrew	Mother	56%	77%	65 Mild range	64 Mild range	–
Marshall	Mother	22%	95%	–	–	66 Moderate range

Note. BRIEF = *Behavior Rating Inventory of Executive Functioning*; BRIEF-A = *Behavior Rating Inventory of Executive Functioning-Adult*; SRS-2 = *Social Responsiveness Scale-2nd edition*. BRIEF and BRIEF-A scores reported are the Global Executive Composite score percentile, and greater percentile scores indicate greater support needs. SRS-2 scores reported are the Total Score results, where a score of 59 or below indicates social behavior within normal limits, 60-65 indicates a mild range of social deficiencies, 66-75 a moderate range, and 76 or higher a severe range. – indicates participant completed alternate forms based on requirements as determined by age.

68% of the school day during his final year of high school. His annual IEP goals related to reading comprehension, written expression, and math. He received speech/language services to address receptive, expressive, and pragmatic language skills. Hank indicated a desire to be a chef and work in the service industry in his postsecondary transition plan.

Results of Hank's SRS-2 self-report indicated social behavior within normal limits. The SRS-2 informant report completed by his mother indicated social behavior within the mild range that may lead to mild to moderate interference with everyday social interactions. Results of Hank's BRIEF-A self-report indicated areas of need in the *Organization of Materials* and *Metacognition Indexes.* The BRIEF-A informant report completed by Hank's mother indicated areas of need in the *Shift, Working Memory, Plan/Organize, Task Monitor, Organization of Materials*, and *Metacognition Indexes*.

Hank obtained his job at the amusement park with the assistance of an adult agency approximately one year prior to the start of the study. The amusement park spanned 235 acres and included a variety of rides, shows, food vendors, and special events that attracted approximately one million visitors each year. Hank was a ticket taker and his primary job duty was scanning tickets as park visitors entered the park. Customers at the amusement park were defined as park visitors. Tickets were electronic bar codes on smart phones or printed paper. Hank stood at the entry of the amusement park in front of a podium with a computer and used a handheld device to scan tickets. The amusement park was open seasonally during the warm months of the year (i.e., mid-May to late October). The park was closed during winter and spring months (i.e., November to April) with the exception of December when the park re-opened for Christmas attractions. Hank worked two or three days per week for four to six-hour shifts with no assistance from the adult agency. He earned $9.35 per hour.

Stacey. Stacey was a 22-year-old White female with PDD-NOS who was competitively employed at a senior meal delivery organization, Meals on Wheels. Stacey graduated high school by meeting regular graduation requirements and lived at home with her parents. Stacey's eligibility was confirmed via her three-year re-evaluation conducted in 2013 as part of special education services received at a public high school. The psychologist's report at re-evaluation described clinical diagnoses of PDD-NOS, ADHD, Anxiety Disorder-Not Otherwise Specified, and Developmental Coordination Disorder. Stacey attended both special and general education classes in high school. She received occupational therapy, counseling, and indirect language services as part of her special education services. Stacey's postsecondary goal was to become a veterinarian assistant.

Results of Stacey's SRS-2 self-report form indicated social behavior within normal limits. However, the SRS-2 informant form completed by Stacey's father indicated social behavior within the severe range that was strongly associated with a clinical diagnosis of ASD. Similarly, results from Stacey's BRIEF-A self-report form indicated no areas of need whereas Stacey's father reported areas of need in the *Inhibit, Shift, Self-Monitor, Initiate, Plan/Organize, Task Monitor, Organization of Materials, Behavioral Regulation Index, Metacognition Indexes,* and *Global Executive Composite Indexes.*

Stacey obtained her job at Meals on Wheels with assistance from her family approximately 1.5 years prior to the start of the study. Meals on Wheels is a federally funded program that delivers meals to elderly people or other citizens in the community who are unable to leave their homes. Stacey's primary job duty was to hand the packaged meals in coolers to volunteer drivers. Customers at Meals on Wheels were volunteer drivers who delivered food. Stacey worked in a kitchen area with an adjacent loading dock. Volunteer drivers approached the dock and requested Stacey locate and retrieve meals for their specific route. After hearing the

driver's route, Stacey went to the kitchen to retrieve the specific coolers and brought them to the drivers at the loading dock. Stacey worked at Meals on Wheels five days a week for four-hour shifts. A job coach from an adult agency was available to assist Stacey if requested by Meals on Wheels. However, she routinely worked without job coach assistance. Stacey earned $8.50 per hour.

Cole. Cole was a 26-year-old White male with ASD who was competitively employed at a movie theater. Cole graduated high school by meeting regular graduation requirements and lived at home with his parents. Cole attended a community college for four years and earned an Associate of Arts in General Studies. Cole's eligibility was confirmed via his final year IEP which indicated a medical diagnosis of PDD-NOS and complex partial seizure disorder and special education eligibility under the autism category. Cole attended general education classes 88% of the school day during his final year of high school. Cole indicated a desire to attend a two- or four-year college in his postsecondary transition plan. Results from Cole's SRS-2 self-report and informant report indicated behavior social behavior within normal limits. Cole indicated no areas of need on the BRIEF-A self-report. Cole's father indicated areas of need in the *Initiate* and *Metacognition Indexes* on the BRIEF-A informant report.

Cole obtained his job at the movie theater with the assistance of an adult agency approximately nine months prior to the study. The movie theater included eight screens, a large concession area, and bar area. Cole's primary job duty was to work the cash register in the concession area. Customers at the movie theater were defined as movie patrons who required service at the concession area. Cole collected payment from movie patrons as they ordered food items (e.g., popcorn, soda, candy) and/or purchased movie tickets. He also scanned pre-purchased movie tickets. Cole stood behind the cash register and movie patrons approached the register to purchase food and/or movie tickets. Cole worked at the movie theater two or three

days per week for three to six-hour shifts. An employment specialist from an adult agency met with Cole once per month for monitoring purposes. However, he routinely worked at the movie theater with no on-the-job assistance from the employment specialist or a job coach. Cole earned $9.00 per hour.

Aaron. Aaron was a 19-year-old White male with PDD-NOS and intellectual disability. He participated in work-based learning at a nursing home through a program at a public school district for students ages 18-21 years. He received special education services in the autism eligibility category at the time of the study and lived at home with his parents. Aaron also had an intellectual disability as described in his current IEP. His annual IEP goals related to asking for help, job readiness skills, and transition. Aaron received community-based instruction, speech/language services, and occupational therapy as components of his special education services. Results from Aaron's SRS-2 self-report and informant report indicated social behavior in the mild range leading to some interference with everyday social interactions. Results of Aaron's Brief-A self-report and informant reported indicates areas of need in the *Metacognition Index*.

Aaron's primary job duty at the nursing home was delivering mail and newspapers to the nursing home residents. The nursing home included 180 rooms organized in three wings or areas: luxury retirement rooms, assisted living, and memory care. Nursing home residents who received mail or newspaper were considered customers. Aaron sorted the mail according to the different wings of the nursing home and pushed a cart with the organized mail throughout the hallways. Aaron knocked on resident doors, then handed the mail and/or newspaper to the resident who answered the door. Aaron worked at the nursing home five days per week for three-hour shifts with the assistance of a job coach. The job coach was a paraprofessional employed by

Aaron's school district. Aaron was not paid but earned a grade through his 18-21 program for participating in this work-based learning experience.

Marshall. Marshall was an 18-year-old White male with ASD who participated in a work-based learning experience through the same 18-21 program as Aaron. Marshall worked at the same nursing home as Aaron and took over Aaron's responsibilities after Aaron completed the study and began a different job at the nursing home. Marshall lived at home with his parents at the time of the study. Marshall's current IEP indicated a primary eligibility of ASD and secondary diagnosis of ADHD. His annual IEP goals related to math skills and job skills. Marshall's postsecondary goal was to participate in on-the-job training in a field of his interest. He received community-based instruction, speech/language services, and occupational therapy as components of his special education services.

Results from Marshall's SRS-2 informant report completed by his mother indicated social behavior in the moderate range that led to substantial interference with everyday social interactions. Marshall did not indicate any areas of need on the BRIEF-A self-report form. However, Marshall's mother indicated areas of need in the *Inhibit*, Shift, *Emotional Control, Self-Monitor, Working Memory, Plan/Organize, Task Monitor, Behavioral Regulation, Metacognition*, and *Global Executive Composite Indexes*.

Marshall's job duties at the nursing home were also to deliver mail and newspapers. He first sorted the mail and newspaper according the different wings of the nursing home and then pushed a cart with the organized mail throughout the hallways. He knocked on the doors of the nursing home residents to hand the mail and/or newspaper directly to the residents. Marshall worked at the nursing home five days a week for three-hour shifts with the assistance of the same job coach as Aaron. Marshall was not paid but earned a grade through his 18-21 program for participating in this work-based learning experience.

Intervention Agents

The primary researcher and three research assistants served as intervention agents during the intervention condition. The primary researcher (i.e., first author) was a special education doctoral candidate and licensed special education teacher. The first research assistant was a counseling psychology doctoral student, and the second was an educational psychology master's student. The third research assistant served as a substitute at one setting only when the first and second assistants were unavailable. All intervention agents had experience working with adolescents and young adults with ASD in community settings. The three research assistants were trained by the first author to implement the VM intervention prior to baseline data collection (training procedures described below). Research assistants also served as data collectors at the employment settings and conducted reliability and treatment integrity measures.

Co-workers, job coaches, and supervisors served as intervention agents during the generalization condition of the study. This condition required individuals currently working in the employment settings to implement the VM intervention. Co-workers served as intervention agents at the amusement park and Meals on Wheels. A co-worker and supervisor served as intervention agents at the movie theater. A job coach served as the intervention agent at the nursing home because there were no co-workers who performed the same mail/newspaper delivery duties as the participants. Co-workers, supervisors, and job coaches were trained by the first author prior to implementing the VM intervention with participants (training procedures described below). Demographic information for intervention agents during the generalization condition is in Table 6.

Table 6.

Natural Intervention Agents Demographic Information

Employment setting	Role	Gender	Age	Race
Amusement park	Co-worker	F	23	Black
Meals on Wheels	Co-worker	F	40	White
Movie theater	Co-worker	F	17	White
Movie theater	Employer	M	30	White
Nursing home	Job coach	M	42	Black

Note. F = female; M = male

Experimental Design

A multiple baseline across behaviors design was utilized to evaluate the effectiveness of the VM intervention. Multiple baseline designs are variations of time-lagged single case research designs and commonly used in clinical and educational settings (Gast, Lloyd, & Ledford, 2018). Customer service phrases contextualized to the employment settings served as the behaviors. Specifically, greeting, service, and closing phrases appropriate for customer interactions at each setting were identified as target behaviors. A multiple baseline across behaviors design was chosen because the target behaviors of customer service phrases were both functionally independent and functionally similar (Gast et al., 2018). That is, the customer service phrases were likely respond to the same independent variable but introduction of the independent variable to one tier would not cause a change in other untreated tiers. An additional reason this design was selected was that withdrawal of the independent variable was not required, which was considered advantageous in community employment settings where quality work performance was expected on a daily basis.

Baseline data were collected concurrently for the three behaviors for each participant for a minimum of five data points. When baseline data were stable in all tiers (using a 20% stability

envelope; Barton et al., 2018), the VM intervention was introduced to the first behavior, a greeting phrase. For the second behavior, all participants were taught a service phrase, and the third behavior was a closing phrase. Behaviors were assigned to tiers per multiple baseline across behaviors design according to the natural sequence of interaction with customers. The criterion for advancing to subsequent conditions was 80% or higher usage of the targeted phrase on three consecutive sessions and continued stable responding in baseline in other tiers. The VM intervention was introduced in a staggered manner to all tiers in order to allow for three opportunities of a potential experimental effect per participant. A maintenance condition was incorporated to evaluate potential sustained effects of the intervention. A generalization condition evaluated whether the VM intervention could be applied by other individuals in the workplace and functioned as a representation of social validity. Given there were five participants in this multiple baseline across behaviors design study, functional relations were evaluated based on intrasubject replication (Johnston & Pennypacker, 2009) and intervention generality was demonstrated by intersubject replications of the VM effects (Johnston & Pennypacker, 2009).

Independent Variable and Materials

Video modeling was selected as the independent variable because it is a well-established intervention for individuals with ASD (Wong et al., 2015) but has not been shown to improve customer service skills in community employment settings. Published VM guides in the special education literature informed the development of procedures for this study (e.g., Banda, Matuszny, & Turkan, 2007; Delano, 2007; McCoy & Hermansen, 2007).

Three videos individualized for each employment setting were produced for a total of 12 videos used in the study. The two nursing home participants (Aaron and Marshall) used the same videos given the setting was the same. The first video for each participant targeted the greeting

phrase. The second video for each participant targeted greeting and service phrases. Finally, the third video for each participant targeted greeting, service, and closing phrases. Scripts were developed for all employment settings prior to filming that included job-specific target phrases (see Appendix D).

All videos were filmed at the employment settings where the participants worked on days the participants were not present. Graduate research assistants or co-workers modeled the target skills (if available and when they provided informed consent). Authentic customers (i.e., nursing home resident) were featured in the videos if they were available and provided informed consent. An E0S Rebel T5i Canon digital camera with video recording capability was used to film the videos. The raw video footage was transferred to a laptop computer and edited using iMovie® video editing software (Version 10.1.11). All videos were edited to include a title slide, introductory narration video clip, modeling of target behavior video clip, instructional text slides, and closing text slide. The text slides included instruction regarding quality of delivery of phrases in the same categories of the Observer Impression Scale: tone of voice, timing, body language, and appropriate statements. Voice-over of all text slides was incorporated to ensure participants could engage with the video content both visually and auditorily. A minimum of two exemplars for each customer service phrase were provided in all videos. Video duration ranged from 1:41 to 3:13 m. Table 7 provides the specific video durations.

All edited videos were stored and displayed on laptops of the primary researcher and graduate research assistants. Playback devices varied in the generalization condition depending on the preference of supervisors and technology available at each employment setting. For example, videos were played on a desktop in an employee-only office space at the amusement park. Meals on Wheels and movie theater supervisors opted to have participants continue to

Table 7.

Video Durations

Employment setting	Video #1: Greeting phrase	Video #2: Greeting and service phrases	Video #3: Greeting, service, and closing phrases
Amusement park	1:41 min	2:15 min	2:35 min
Meals on Wheels	1:51 min	2:29 min	3:02 min
Movie theater	1:43 min	2:15 min	2:57 min
Nursing home	1:52 min	2:30 min	3:13 min

watch the videos on laptops of research staff during the generalization condition. The school provided an iPad for Aaron and Marshall, the two participants working at the nursing home. Aaron utilized the iPad for all generalization sessions, but Marshall utilized both the iPad and laptops of research staff because the iPad was not consistently available. All videos were given to participants and their supervisors or school staff at the conclusion of the study.

Dependent Variables and Instrumentation

The primary dependent variables were verbalizations of customer service phrases contextualized to the employment settings. Specifically, operationalized definitions of greeting, service, and closing phrases specific for each setting were identified during preliminary observations by obtaining input from the supervisor and observing co-workers without disabilities who performed the same job duties (if available). Topographies of correct greeting, service, and closing phrases were specified for each participant (see Table 8, p. 77). All customer service phrases were three words or longer. The greeting phrase indicated a salutation or welcome statement (e.g., “Welcome to (place)” or “How are you doing today?”) at the beginning of the transaction or task (e.g., scanning a ticket, delivering mail). Service phrases indicated a service-related need specific to the employment setting (e.g., “Here you go” or “Would you like

anything else?"). Closing phrase indicated a farewell to the customer or other target individual upon the transaction or task concluding (e.g., "Bye, have a good day!" or "See you tomorrow"). Percent was calculated by dividing the number of opportunities greeting, service, and closing phrases were used by total number of available opportunities in that data collection session. Responses were graphed for visual analysis (see Data Analysis section, p. 85).

Behavioral observations. Behavioral observations occurred immediately following the VM session in which participants watched the designated video. The first author and secondary data collectors stood or sat within hearing and viewing distance of the participant (i.e., 5 to 10 feet) to collect data on verbalization of the customer service phrases and assess the quality of interactions with customers using the Observer Impression Scale. A paper data collection page was utilized (see Appendix E). Observers also noted the beginning and ending times for each observation and wrote novel phrases verbalized by the participants on the back of the data collection page. Data collectors behaved in ways that were inconspicuous to blend into the natural workplace environment (e.g., pretending to browse merchandise, standing by the entrance, acting as a volunteer). Data collection sessions took place for one hour or 20 opportunities for participants to interact with customers, whichever came first. A full transaction or task had to occur to be considered an opportunity for data collection purposes. Refer to Table 8 for a description of what constituted opportunities and non-opportunities for each employment setting. An opportunity at the amusement park was defined as a park visitor or group of park visitors (e.g., couple, family) entering the park for regular admission purposes. An opportunity at Meals on Wheels was defined when a volunteer driver requested their meals for delivery. An opportunity at the movie theater was defined as a movie patron approaching the cash register to

Table 8.

Greeting, Service, and Closing Phrases in the Employment Settings

Employment setting	Job duties	Location of interaction	Greeting opportunity and target phrase	Service opportunity and target phrase	Closing opportunity and target phrase	Non-examples and rationale
Amusement park	Scanning tickets of park guests as they enter the park	Entrance to amusement park	Park guest approaches entrance of amusement park. "Welcome to [amusement park name]!" "Hi, how are you?"	Park guest gives ticket to young adult to scan. "Can I take your ticket?" "Would you like a map?"	Park guest leaves ticket taker area to enter the amusement park. "Have a good day!" "Bye, have fun!"	Park guest shows re-entry stamp to re-enter the amusement park. Reason: No scanning of ticket required.
Meals on Wheels	Handing meals to volunteer drivers	Loading dock where volunteer drivers pick up meals	Volunteer drivers pulls up to loading dock and requests meals. "Hi, how are you doing today?" "Hi, good morning!"	Young adult hands coolers with meals to volunteer driver. "Here are your hot/cold meals." "What route are you?"	Volunteer driver leaves with meals. "See you in a little bit!" "Have a good day!"	Volunteer drops off donation items. Reason: No pick-up of meals.
Movie theater	Operating the cash register, taking food orders, and scanning movie tickets	Cash register area	Movie patron approaches cash register. "Can I help you?" "How may I help you?"	Movie patron orders food and/or ticket and gives ticket to young adult to be scanned. "What size popcorn would you like?" "Would you like anything else?"	Movie patron leaves cash register area. "Enjoy the movie!" "Have a good night!"	Movie patron asks a question about a movie time. Reason: No delivery of service requiring a cash register transaction.
Nursing home	Delivering mail and newspaper to nursing home residents	Entryway of each nursing home resident's room	Resident answers the door after the young adult knocks. "Good morning, how are you?" "Hi, how's it going?"	Young adult hands mail and/or newspaper to nursing home resident. "Here's your mail and newspaper." "Here you go."	Young adult leaves entryway of the nursing home resident's room. "Bye, have a good day!" "See you tomorrow!"	Nursing home resident is sleeping. Reason: Nursing home protocol to not wake resident for mail/newspaper.

Table 9.

Average Number of Opportunities and Duration of Observation Sessions

Employment setting	Average (range) number of opportunities	Average (range) duration of observation sessions
Amusement park	19.84 (16-20)	13.92 (5-60) min
Meals on Wheels	14.18 (9-18)	39.82 (25-60) min
Movie theater	14.60 (8-20)	58.54 (40-60) min
Nursing home (Andrew)	13.33 (9-19)	38.13 (21-55) min
Nursing home (Marshall)	14.08 (9-20)	46.68 (30-60) min

purchase food items or a movie ticket. Finally, an opportunity at the nursing home was defined as mail or newspaper available to deliver to a nursing home resident. As described above, a percent for each customer service phrase was calculated by dividing the number of times the appropriate phrase was used by total number of opportunities in that data collection session. Therefore, the rate at which customers approached participants to complete the setting-specific transactions or tasks affected the total number of opportunities for data collection sessions. Specifically, more customers created a faster pace and resulted in shorter observations. Conversely, fewer customers created a slower pace and resulted in longer observations. The average number of opportunities and duration of observation sessions for each participant across all conditions of the study is presented in Table 9.

Observer Impression Scale. The Observer Impression Scale was created to assess the quality of delivery of the customer service phrases. The Observer Impression Scale (see Appendix F) evaluated the quality of the phrases in the categories of tone of voice, timing, body language, and appropriate statements. These categories were selected from similar measures used to evaluate behavior exhibited by classroom teachers (Wills, Iwaszuk, Kamps, & Shumate,

2014). Tone of voice referred to the quality of voice while delivering the customer service phrases (e.g., friendly tone of voice versus tone of voice perceived as non-customer oriented). Timing referred to delivery of the customer service phrases in chronological order of (1st) greeting, (2nd) service, and (3rd) closing. Body language referred to orienting the body towards the customer while delivering the phrases and avoiding repetitive body movements (e.g., rocking, pacing, hand flapping). Appropriate statements referred to delivering only the target customer service phrases or other socially appropriate customer service phrases and avoiding off-topic comments (e.g., comments related to a special interest area).

Tone of voice, timing, body language, and appropriate statements were scored for each opportunity the participant interacted with the customer. Definitions for appropriate and inappropriate interactions for each category were operationalized. The percent of appropriate interactions for the four categories was calculated for each data collection session. If fewer than 25% of interactions in one observation session were appropriate for a category, then the participant scored a one for that category. If fewer than 79% of interactions but more than 26% were appropriate, the participant scored a two. If less than 100% but 80% or greater of interactions were appropriate, the participant scored a three. Finally, if 100% of interactions were appropriate, the participant scored a four. One score per category for a total of four scores were reported for each observation session. Reliability checks were conducted for a minimum of 20% of the Observer Impression Scale scores. Means and ranges for each category were reported for each condition of the study (i.e., baseline, intervention, generalization, maintenance) for all participants.

Observer training and measurement reliability. The primary researcher and research assistants served as the primary observers throughout all conditions of the study. Given the

diverse participants and employment settings, research assistants were required to participate in observer training with the primary researcher prior to collecting data at each employment setting. This training consisted of a practice data collection session observing each participant at their employment setting performing the same job tasks at those utilized in the study. Data collectors assessed the customer service phrases and quality of customer interactions using the Observer Impression Scale. At the conclusion of each training data collection session, data collectors discussed examples and non-examples of opportunities to deliver the customer service phrases at the employment setting. Operational definitions of greeting, service, and closing phrases were also discussed and agreed upon. Observer Impression Scale categories were discussed relevant to the behavior exhibited by each participant. Finally, logistics were explained to ensure all data collectors were following the same observational procedures (e.g., best location to hear and see participant, scheduled breaks, typical work schedule).

Total percent of interobserver agreement (IOA) between two observers was calculated using a point-by-point method (Cooper, Heron, & Heward, 2007) utilizing the formula (Agreements) / (Agreements + Disagreements) $\times 100$ = Percent of Agreement. Interobserver agreement must have been 90% or higher for both the primary dependent variable and Observer Impression Scale at each employment setting for secondary data collectors to be considered reliable. Regarding the primary dependent variable, the first graduate research assistant (counseling psychology student) scored 100% IOA at the Meals on Wheels training data collection session, and 100% IOA at the nursing home training data collection session. He also scored 100% IOA for the Observer Impression Scale at both settings. This graduate research assistant collected data at these two settings only. Regarding the primary dependent variable, the second research assistant (educational psychology student) scored 98.33% at the amusement

park, 100% at Meals on Wheels, 98% at the movie theater, and 100% at the nursing home training data collection sessions. She also scored 100% IOA for the Observer Impression Scale at the four settings. This research assistant collected data at all four settings. The substitute research assistant collected data at the nursing setting only. He scored 95% during the training data collection session for the primary dependent variable and 50% for the Observer Impression Scale. Disagreements related to the Observer Impression Scale were discussed and resolved during training.

Social validity. Participants and their co-workers, job coaches, and/or supervisors completed a questionnaire to report their overall satisfaction with the VM intervention (see Appendix G). The questionnaire consisted of eight items in which participants ranked their level of agreement using a four-point Likert-style scale. Anchors were: *1 strongly disagree*, *2 disagree*, *3 agree*, and *4 strongly agree*. Statements related to the effectiveness of the intervention (e.g., "The VM intervention helped me do my job better"), feasibility of the intervention (e.g., "The VM intervention was easy to use"), and level of enjoyment while watching the videos (e.g., "I thought the videos were fun and engaging"). Statements were the same content across all questionnaire versions, but the language was slightly altered for respondent roles. A text box to write additional comments and two open-ended questions were also included. The open-ended questions were: "What did you like best about the VM intervention?" and "What suggestions for improvement do you have regarding the VM intervention?" As an additional measure of social validity, participants were asked to rank their preference for whom to watch the videos with if the study were to continue (i.e., researcher, co-worker, job coach, or by themselves). This question was incorporated to evaluate the intervention

agent preferences of participants given different intervention agents applied the VM intervention during the study.

Generalization and maintenance of the intervention was also used to evaluate social validity. Generalization is an important component of behavior change and evaluates the effects of an intervention over time, persons, and settings (Stokes & Baer, 1977). Programming for generalization is recommended rather than expecting outcomes to generalize with no explicit planning. Therefore, co-workers, job coaches, and supervisors applied the VM intervention in the generalization condition to program for different intervention agents other than researchers to support customer service skills of all participants after the study concluded. Maintenance is also an important component of social validity and evaluates an intervention's sustained effects after the desired behavior changes have been achieved (Kennedy, 2005). Maintenance data collection sessions were incorporated two and four weeks after intervention cessation to evaluate whether social communication skills were maintained.

Procedures

Intervention agent training. The primary researcher trained all research assistants to implement the VM intervention prior to participants watching the videos. Training consisted of showing the research assistants the treatment integrity checklist (see Appendix H) and discussing each step. Research assistants then completed each step of the treatment integrity checklist with the primary researcher acting as a confederate participant. A minimum of 90% accuracy during training was considered acceptable. All research assistants applied the VM intervention with 100% adherence to the treatment integrity checklist during training.

Similarly, co-workers, job coaches, and supervisors were trained to implement the VM intervention prior to the generalization condition. The treatment integrity checklist used with the

research assistants was modified to be more concise and practitioner-friendly (see Appendix H). The primary researcher showed the modified treatment integrity checklist to the co-workers, job coach, and supervisor and discussed each step in detail. The primary researcher answered questions and provided clarification as needed. Co-workers, job coaches, and supervisors were able to implement the VM intervention with participants if they indicated they felt comfortable and had no additional questions regarding the treatment integrity checklist. Playback devices used by the natural intervention agents (e.g., amusement park desktop, school district iPad) were also checked during training.

Baseline condition. Participants performed their job duties without access to the videos during the baseline condition. Participants were aware the study targeted social and communication skills at work but were not provided with specific details about the videos or target customer service phrases. Baseline observations were conducted for a minimum of five sessions across all tiers for all participants. Participants who worked with the support of a job coach (i.e., Aaron and Marshall) received coaching if needed for task competition, but the job coach was asked to avoid providing instruction regarding the customer service phrases. Similarly, co-workers and supervisors were told to provide assistance to participants as usual but avoid explicit coaching regarding customer interactions.

Video modeling intervention condition. All VM sessions took place during a participant's regularly scheduled work shift. Intervention agents asked participants to watch the designated video in a quiet, employee-only space immediately prior to the behavioral observations for data collection purposes. Videos were shown in a manager's office at the amusement park, Meals on Wheels, and movie theater settings. Videos were shown in an empty dining commons area or game room at the nursing home setting. Participants did not have access

to the videos outside the scheduled VM sessions. Intervention agents checked for understanding after the video played by saying, “What customer service phrase(s) will you say today?” Coaching and verbal praise was provided based on participants’ responses. Participants were given the option to view the video a second time if desired. However, all participants opted to view the video only once during VM intervention sessions.

The primary researcher collaborated with supervisors to determine the best video viewing schedule at each setting based on regularly assigned work shifts. In addition, the primary researcher and supervisors determined the ideal time for data collection sessions to obtain a minimum of eight customer interactions in one hour to meet the setting criteria. Only one VM session occurred per each work shift for participants at Meals on Wheels (Stacey) and the nursing home (Aaron and Marshall) given these participants worked five days per week for relatively short shifts. One or two VM sessions occurred during a work shift at the amusement park (Hank) and movie theater (Cole) given these participants worked two or three days per week for slightly longer shifts. Two sessions were conducted during a single work shift for Hank on all sessions except during the generalization and maintenance conditions. This ensured Hank was eligible for and could potentially benefit from participating in the study before the amusement park closed for the winter season. Two sessions were conducted for Cole on Saturdays when he worked during both the matinee and evening movie times, which allowed for sufficient number of customer interactions. If two sessions occurred during one work shift, then a minimum of one hour elapsed between each session at the amusement park and approximately three hours elapsed between each session at the movie theater.

Generalization and maintenance conditions. A co-worker, job coach, or supervisor applied the VM intervention during the generalization condition. This was done to ascertain the

feasibility and sustainability of the VM intervention applied by individuals within the employment setting rather than researchers. The primary researcher was present during generalization sessions to measure treatment integrity and provide coaching if fidelity was lower than 80% according to the treatment integrity checklist (see Appendix H). However, this never occurred in the study.

Maintenance probes were conducted two and four weeks following VM intervention cessation. Participants and their co-workers, job coaches, and/or supervisors did not have access to the videos after the generalization condition. Videos were not shown during the two and four-week maintenance sessions. Rather, the observational procedures previously described were again used to determine whether participants maintained their customer service skills without watching the videos.

Data Analysis

Each participant's responses to the VM intervention were plotted on a line graph in Microsoft Excel and were subjected to a systematic process for conducting visual analysis as described by Barton and colleagues (2018). Formative visual analysis was conducted within and across conditions to identify changes in behavior as participants progressed through the study. Summative visual analysis was conducted at the conclusion of the study by analyzing all opportunities for potential behavior change to determine if a functional relation existed between the VM intervention and the dependent variable (i.e., increased verbalization of customer service phrases). A minimum of three demonstrations of effect was used to establish experimental control and a potential functional relation (Barton et al., 2018; Horner et al., 2005; Kratochwill et al., 2010; Kratochwill et al., 2013).

Formative visual analysis. Within condition analyses of level, trend, variability/stability, overlap, and immediacy of change were conducted as components of the formative visual analysis process. Level was reported for each condition by reporting the range of percents or amount of behavior change in that condition. Although not generally recommended (Barton et al., 2018), the mean responding for each condition was reported to supplement the range.

Trend refers to the slope or direction of the data path. Each condition was analyzed using the split middle method to determine trend direction as accelerating, decelerating, or flat (Barton et al., 2018; Gast & Spriggs, 2014). The steps for conducting the split middle method were as follows: (1) Data within each condition were divided in half. If there was an even number of data points, the vertical line was drawn between the two midpoints. If there was an odd number of data points, the vertical line was drawn through a data point. (2) Within each half of the condition, another vertical line was drawn to divide those data points in half. (3) Finally, a horizontal line (i.e., line of progress) was drawn at the median value that intersected each vertical line. The line of progress was characterized as accelerating, decelerating, or flat. The split middle method was used as a judgement aid and interpreted in combination with other tools of visual analyses when decisions regarding functional relations were made (Barton et al., 2018). In addition, this method requires a minimum of four data points. All conditions met this criterion.

Stability refers to the consistency of data within a condition, and variability refers to a lack of stability. Stability of responding within a condition was calculated using a stability envelope (Barton et al., 2018; Gast & Spriggs, 2014). Steps for calculating the stability envelope were: (1) The values for each data series within a condition were ordered from least to greatest, (2) the median value was identified, (3) values for 25% above and 25% below the median were identified, (4) values within the data series were identified as within the envelope or outside the

envelope, and (5) the percent of values within the envelope was calculated. If 80% of the values fell within 25% of the median, the data were considered stable. Twenty-five percent was selected to determine stability because the behavior of interest in this study was trial-based rather than free-operant responding (Barton et al., 2018).

Overlap refers to the values of data in one condition that are within the same range of values of data in an adjacent condition (Barton et al., 2018). Smaller proportion of overlap is associated with more convincing demonstrations of effect. Percent of non-overlapping data (PND; Scruggs et al., 1987) was calculated to estimate the change between two adjacent conditions. Steps used to calculate PND as described in Barton et al. (2018) were: (1) the range of values in the first condition were identified, (2) the number of data points with values beyond the range of values in the first condition were counted, (3) the number of data points in the second condition with values beyond the range of values in the first conditions were divided by the total number of data points in the second condition and (4) percent was calculated by multiplying the number calculated in Step 3 by 100. Limitations associated with PND as an effect size indicate it should instead be used as one tool in the formative visual analysis process to estimate between-condition level changes (Barton et al., 2018; Gast & Spriggs, 2014; Parker & Vannest, 2014).

Immediacy of change refers to the degree of behavior change upon introducing the intervention (Barton et al., 2018). An abrupt change was indicated when the first intervention session datum was 80% or greater than the final baseline datum. For example, if the final baseline datum was 20%, then the first intervention datum must have been 36% or greater to be considered abrupt ($20 \times .80 = 16$, $20 + 16 = 36$). However, this formula was not calculable when the final baseline datum was 0%. If the final baseline datum was 0%, then the inverse of 80%

was calculated using the first intervention datum. For example, if the first intervention datum was 65%, then an abrupt change would be indicated if the final baseline datum was 52% or lower (65 × .80 = 52). Immediacy of change was reported as abrupt or not abrupt. A functional relation can still be identified when delayed responding to an intervention occurs (Barton et al., 2018). However, an abrupt change indicated VM was a potentially powerful intervention and more convincing evidence of an effect.

Summative visual analysis. Summative visual analysis was conducted for each participant at the conclusion of the study. At least three demonstrations of behavior change at three different points in time were required to establish a functional relation (Gast & Spriggs, 2014; Horner et al., 2005; Horner, Swaminathan, Sugai, & Smolkowski, 2012; Kratochwill et al., 2010). Given the staggered nature of the multiple baseline across behaviors design, responding to the VM intervention occurred at different points in time. Consequently, a functional relation for each participant was concluded if an experimental effect was evident for each of the three target behaviors. A summative conclusion regarding the efficacy of the VM intervention was reported for each participant.

A study-level summative visual analysis was conducted in additional to the individual-level summative visual analysis. The generality of the findings for the VM intervention were enhanced when similar effects were present across diverse participants and settings. This study included opportunities for both intrasubject and intersubject replications (Johnston & Pennypacker, 2009) because there were five participants with three target behaviors per participant. Accordingly, a summative conclusion regarding the efficacy of the VM intervention was also reported.

Reliability, Treatment Integrity, and Intervention Intensity

Interobserver agreement between two data collectors was calculated for a minimum of 20% of behavioral observations across baseline, intervention, and generalization conditions of the study. The point-by-point method as described in the training procedures utilizing the formula [(Agreements) / (Agreements + Disagreements) ×100 = Percent of Agreement] (Cooper et al., 2007) was used for both IOA of target behaviors and Observer Impression Scale overall session scores. Data were considered reliable if the two observers had 90% or higher agreement. Reliability was conducted for one baseline session for each participant. Reliability of baseline data for Hank was 100%, Stacey was 98%, Cole was 98%, Aaron was 97%, and Marshall was 100%. The mean reliability of VM intervention sessions for all participants was as follows: Hank 98% (range 97-98%), Stacey 99% (range 95-100%), Cole 97% (range 92-100%), Aaron 99% (range 98-100%), and Marshall 99% (range 97-100%). Finally, reliability was conducted for one generalization session per participant and was as follows: Hank 100%, Stacey 100%, Cole 100%, Aaron 100%, and Marshall 98%.

Interobserver agreement for the Observer Impression Scale was conducted during the same data collection sessions as reliability for the target behaviors. Given the Observer Impression Scale was a four-point scale, possible scores for reliability were 0%, 25%, 50%, 75%, and 100%. Observer Impression Scale reliability scores during baseline were as follows: Hank 100%, Stacey 100%, Cole 100%, Aaron 100%, and Marshall 100%. Mean Observer Impression Scale reliability scores during the VM intervention phase were: Hank 96% (range 75-100%), Stacey 90% (range 50-100%), Cole 100%, Aaron 97% (range 92-100%), and Marshall 81% (range 25-100%). Finally, Observer Impression Scale reliability scores during generalization were: Hank 100%, Stacey 100%, Cole 100%, Aaron 75%, and Marshall 100%.

Treatment integrity of the VM intervention was assessed via checklist. The primary researcher and/or research assistants completed the treatment integrity checklist during 100% of the VM sessions. During the generalization condition, the primary researcher and/or research assistants completed the treatment integrity checklist to evaluate whether the co-worker, job coach, or supervisor applied the VM intervention with fidelity. A minimum of 20% of sessions across both the primary VM intervention condition and generalization condition were assessed for treatment integrity by two data collectors. Each treatment integrity step was scored on a binary scale: 0 (*not present*) or 1 (*present*). Percent of treatment integrity during the VM condition was: Hank 98% (range 86-100%), Stacey 98% (range 71-100%), Cole 96% (range 86-100%), Aaron 100% (range 100-100%), and Marshall 100% (range 100-100%). Percent of treatment integrity during the generalization condition was: Hank 100% (range 100-100%), Stacy 93% (80-100%), Cole 100% (100-100%), Aaron 100% (range 100-100%), and Marshall 94% (range 83-100%). Reliability of treatment integrity data was calculated using the same point-by-point formula described above (Cooper et al., 2007).

Finally, aspects of intervention intensity were documented for each participant according to procedures described by Codding and Lane (2015) and Warren, Fey, and Yoder (2007). Evaluating the intensity of an intervention entails both the quality and quantity of the intervention services delivered (Barnett & Escobar, 1990; Codding & Lane, 2015; Warren et al., 2007). Dose is perhaps the most commonly recognized construct of intervention intensity. In the present study, dose was defined as the duration of the video in minutes and seconds. Dose frequency was the number of times the video was watched by the participant across all conditions of the study. Cumulative intervention intensity for each participant was calculated by multiplying the dose of each video by the dose frequency. Cumulative intervention intensity

averaged 49 min across all participants. Specifically, Hank received a total of 42 min of VM instruction at the amusement park. Stacey received a total of 57 min of VM instruction at Meals on Wheels. Cole received a total of 41 min of VM instruction at the movie theater. Aaron received a total of 3 54 min of VM instruction at the nursing home. Finally, Marshall received a total of 51 min of VM instruction at the nursing home.

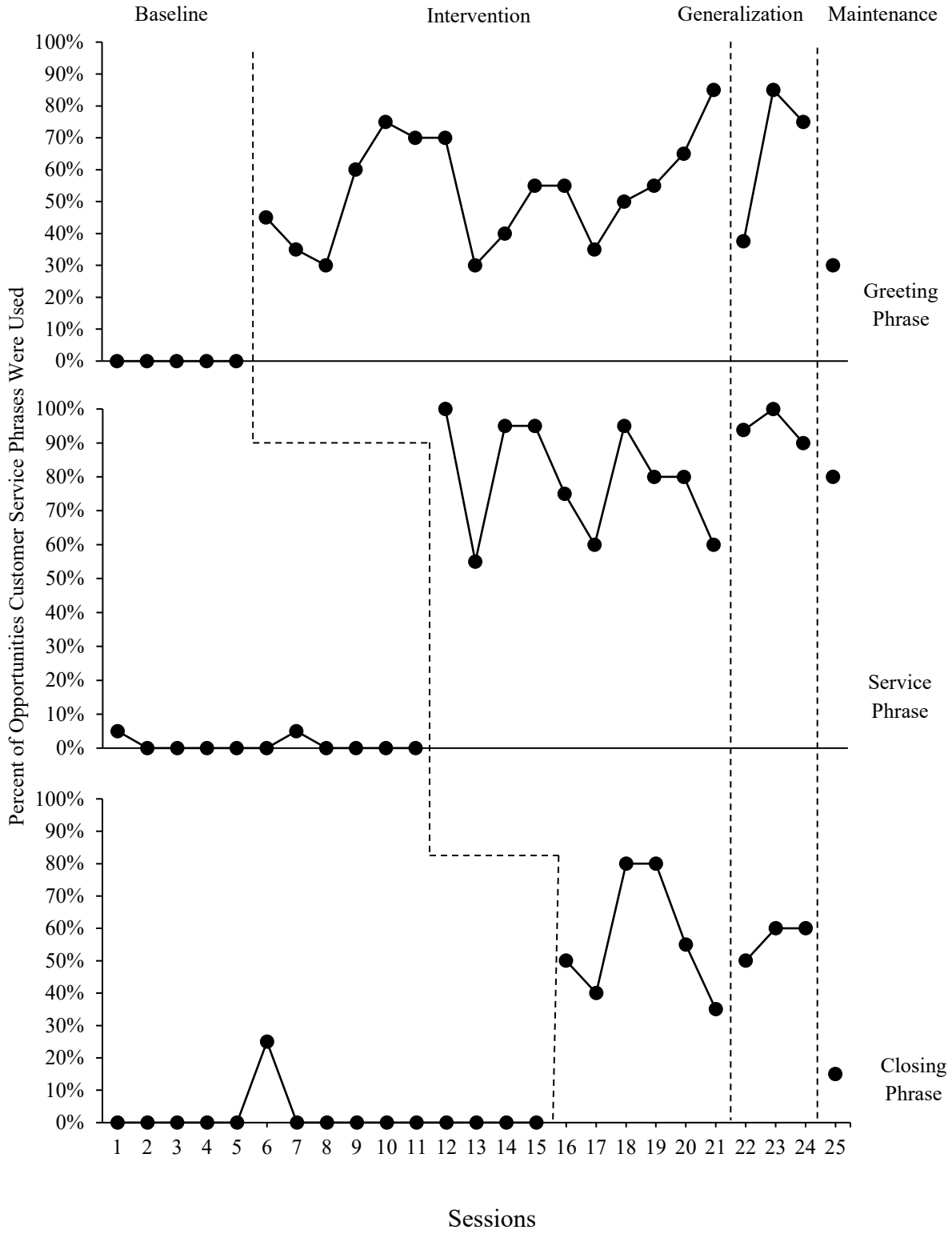
Chapter IV: Results

Participant responses to the VM intervention are described and graphs for each participant's responses are below. Individual-level and study-level results also are described. A table that summarizes results from visual analysis is provided following individual results. Level, trend, stability, immediacy, and overlap are reported for baseline and VM intervention conditions for each target behavior and were used to determine whether an experimental effect was present. If three demonstrations of an experimental effect for a participant were evident, then a functional relation was concluded. Generalization and maintenance conditions are also described along with Observer Impression Scale and social validity questionnaire results.

Video Modeling Intervention Results

Hank. Figure 2 depicts Hank's responding to the VM intervention. Hank rarely used the customer service phrases during baseline as indicated by a level of 0% for greeting phrases, 1% (range 0-10%) for service phrases, and 2% (range 0-25%) for closing phrases. All baseline trends were flat and baseline data were stable. Upon implementation of the VM intervention, Hank's level increased to 53% (range 30-85%) for greeting phrases, 80% (range, 55-100%) for service phrases, and 57% (range 35-80%) for closing phrases. Intervention condition trends were decelerating (greeting and service phrases) and accelerating (closing phrase). All intervention data were unstable. An abrupt change was evident for all three phrases. The PND across all phrases was 100%. An experimental effect was evident for the three behaviors at three different points in time, indicating a functional relation existed between the VM intervention and Hank's customer service phrases (Barton et al., 2018).

Figure 2. Hank's responding to the VM intervention at the amusement park

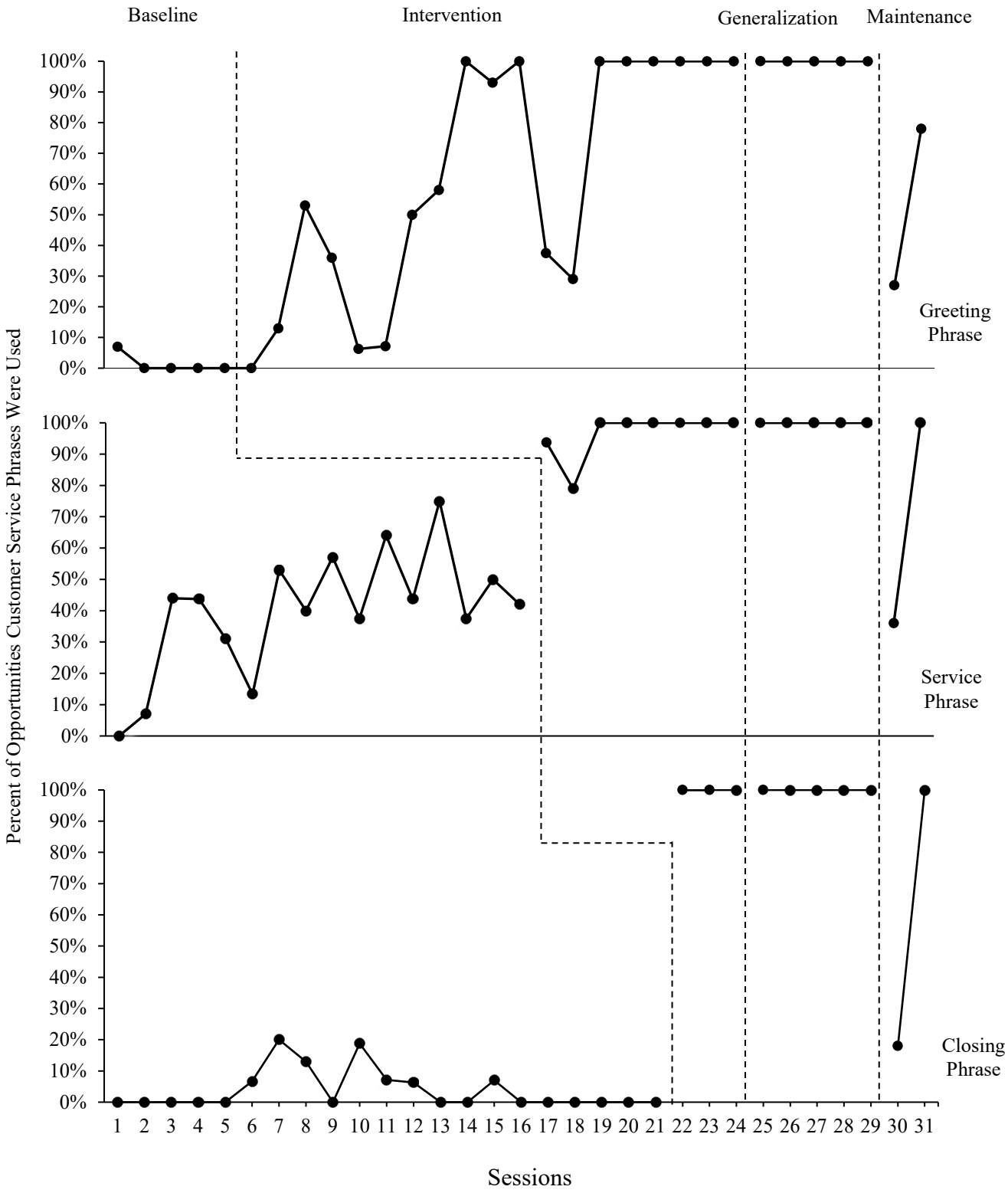


Data indicated VM generalized to a co-worker as the intervention agent. Levels of responding during generalization were 66% (range 38-85%) for greeting phrases, 96% (range, 94-100%) for service phrases, and 57% (range 50-60%) for closing phrases. Finally, only one maintenance session at two-weeks was conducted because the amusement park closed for the season. Greeting phrase responding was not maintained at 30% at the two-week follow-up. However, Hank maintained the service phrase at 80% during the two-week follow up. Hank did not maintain the closing phrase at 15% during the two-week follow up.

Stacey. Figure 3 depicts Stacey's responding to the VM intervention. Stacey's baseline levels were 1% (range 0-7%) for greeting phrases, 40% (range 0-75%) for service phrases, and 4% (range 0-20%) for closing phrases. Baseline trends varied across phrases. Specifically, greeting phrases were flat, service phrases were accelerating, and closing phrases were decelerating. All baseline data were stable. Upon implementation of the VM intervention, Stacey's level of responding increased to 62% (range 0-100%) for greeting phrases, 97% (range 79-100%) for service phrases, and 100% for closing phrases. Intervention trends were accelerating for greeting and service phrases and flat for the closing phrase. Intervention data were unstable for greeting phrases and stable for service and closing phrases. An abrupt change was not evident for greeting phrases but was evident for service and closing phrases. The PND was 84% for greeting phrases and 100% for service and closing phrases. An experimental effect was observed for all three behaviors, indicating a functional relation was evident for Stacey (Barton et al., 2018).

Data indicated VM generalized to a co-worker as the intervention agent. The levels during generalization were 100% for all three behaviors. All generalization trends were flat and generalization data were stable. Results indicated Stacey's skills were maintained at

Figure 3. Stacey's responding to the VM intervention at Meals on Wheels

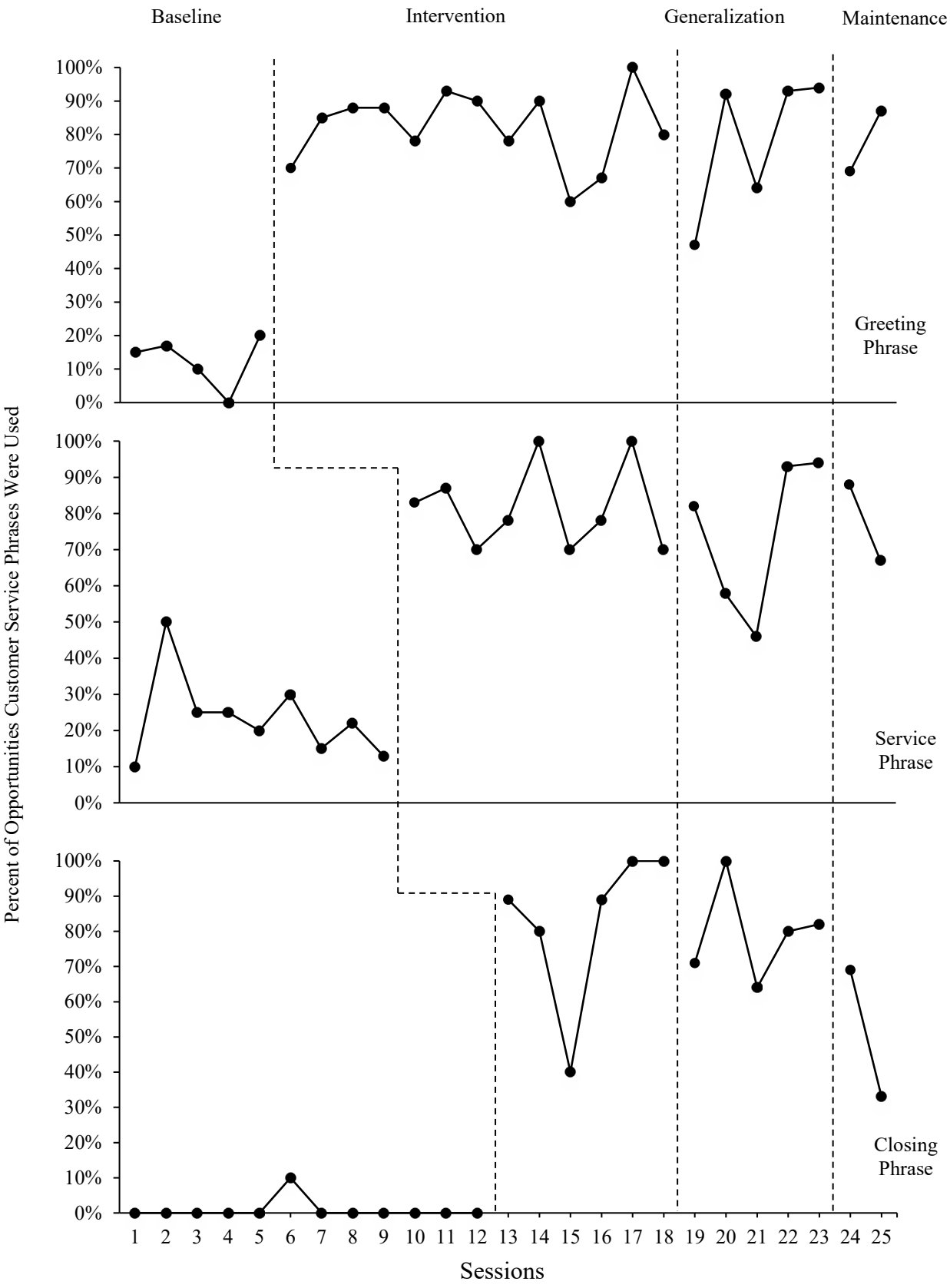


variable levels after the VM intervention concluded. The greeting phrase was not maintained at 27% during the two-week follow-up but increased to 78% at four-week follow-up. Similarly, the service phrase was not maintained at 36% during the two-week follow-up but increased to 100% during the four-week follow-up. Finally, the closing phrase was not maintained at 18% during the two-week follow-up but increased to 100% during the four-week follow-up.

Cole. Figure 4 depicts a graph of Cole's responding to the VM intervention at the movie theater. Cole's baseline levels were 12% (range 0-20%) for greeting phrases, 23% (range 10-50%) for service phrases, and 1% (range 0-10%) for closing phrases. Baseline trends were decelerating (greeting and service phrases) and flat (closing phrase). Baseline data were unstable (greeting and service phrases) and stable (closing phrase). Upon implementation of the VM intervention, Cole's levels increased to 82% (range 60-100%) for the greeting phrase, 82% (70-100%) for the service phrase, and 83% (40-100%) for the closing phrase. Intervention trends were decelerating (greeting phrase) and accelerating (service and closing phrases). Intervention data were stable for the greeting and closing phrases but unstable for the service phrase. An abrupt change was observed for all three behaviors. The PND for all three behaviors was 100%. An experimental effect was observed for all three behaviors at three different points in time, indicating a functional relation was evident for Cole (Barton et al., 2018).

Data indicated VM generalized to a co-worker and supervisor as the intervention agent. Level for the greeting phrase was 78% (range 47-94%) during generalization with accelerating, unstable data. Level for the service phrase was 75% (range 46-94%) during generalization with accelerating, unstable data. Level for the closing phrase was 79% (range 64-100%) with descending, stable data. Finally, results indicated Cole's skills were maintained at

Figure 4. Cole's responding to the VM intervention at the movie theater

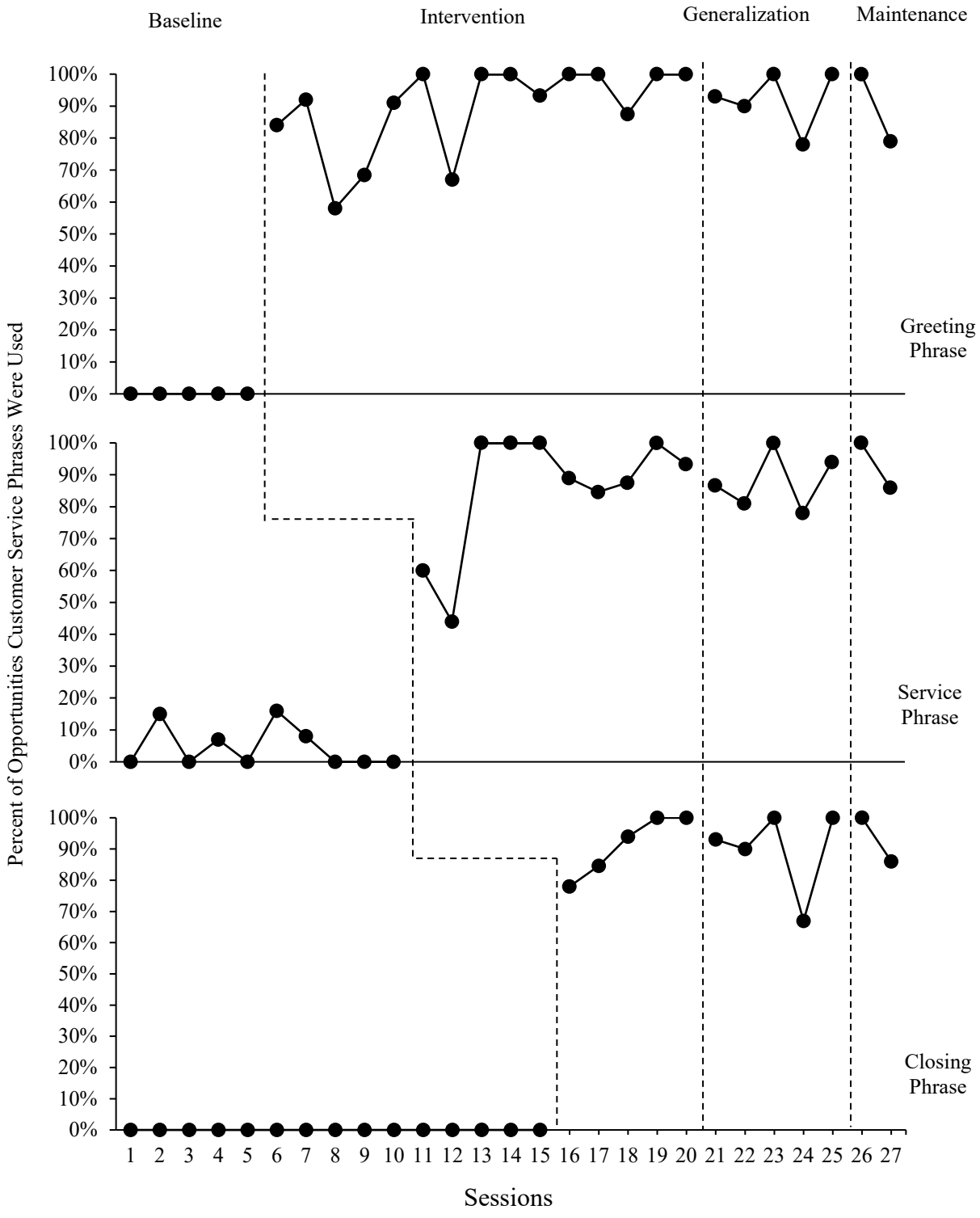


variable levels after the VM intervention concluded. Specifically, Cole maintained the greeting phrase at 69% during the two-week follow-up and 87% during the four-week follow-up. Cole maintained the service phrase at 88% during the two-week follow-up and 67% during the four-week follow-up. Finally, Cole maintained the closing phrase at 69% at two-week follow-up and 33% at the four-week follow-up.

Aaron. Figure 5 depicts the results for Aaron at the nursing home setting. Aaron's baseline levels were 0% for the greeting phrase, 5% (range 0-16%) for the service phrase, and 0% for the closing phrase. All baseline trends were flat, and data were stable. Upon implementation of the VM intervention, Aaron's levels increased to 89% (range 58-100%) for the greeting phrase, 86% (44-100%) for the service phrase, and 91% (range 78-100%) for the closing phrase. Intervention trends were accelerating (greeting and closing phrases) and decelerating (service phrase). Intervention data were stable for all three behaviors. An immediacy of change was observed for all three behaviors. In addition, PND was 100% for the three behaviors. An experimental effect was observed for the three behaviors at three different points in time, indicating a functional relation was evident for Aaron (Barton et al., 2018).

Data indicated VM generalized to a job coach as the intervention agent. Aaron's level for the greeting phrase level was 92% (range 78-100%) during generalization with flat, stable data. Aaron's level for the service phrase was 88% (range 78-100%) during generalization with flat, stable data. Aaron's level for the closing phrase was 90% (range 67-100%) during generalization with a slight decelerating trend and stable responding. Finally, results indicated Aaron's skills maintained at high levels after the VM intervention concluded for all three phrases. Specifically, the greeting phrase maintained at 100% during the two-week follow-up and 79% at the four-week follow up. The service phrase maintained at 100% during the two-week follow up and 86%

Figure 5. Aaron's responding to the VM intervention at the nursing home



during the four-week follow up. The closing phrase maintained at 100% during two-week follow observation and 86% during the four-week follow up.

Marshall. Figure 6 depicts results for Marshall at the nursing home setting. Marshall's baseline levels were 0% for the greeting phrase, 17% (range 0-37%) for the service phrase, and 4% (range 0-18%) for the closing phrase. Baseline trends were flat (greeting and closing phrases) and decelerating (service phrase). Baseline data were stable (greeting and closing phrases) and unstable (service phrase). Upon implementation of the VM intervention, Marshall's levels increased to 89% (range 58-100%) for the greeting phrase, 86% (range 62-100%) for the service phrase, and 100% for the closing phrase. Intervention trends were accelerating (greeting and service phrases) and flat (closing phrase). All intervention data were stable. An abrupt change was evident for all three behaviors, and PND was 100% for all three behaviors. An experimental effect was evident for the three behaviors at three different points in time, indicating a functional relation was evident for Marshall (Barton et al., 2018).

Data indicated VM generalized to a job coach as the intervention agent. Specifically, Marshall's level during generalization for the greeting phrase was 90% (range 75-100%) with a slight decelerating trend and stable data. Marshall's level during generalization for the service phrase was 95% (range 90-100%) with a slight decelerating trend and stable data. Marshall's level during generalization for the closing phrase was 92% (range 80-100%) with a slight decelerating trend and stable data. Finally, results indicated Marshall's skills maintained at high levels after the VM intervention concluded. Specifically, Marshall maintained the greeting phrase at 61% during the two-week follow-up and 82% at the four-week follow-up. Marshall maintained the service phrase at 78% during the two-week follow-up and 91% at the four-week

Figure 6. Marshall's responding to the VM intervention at the nursing home

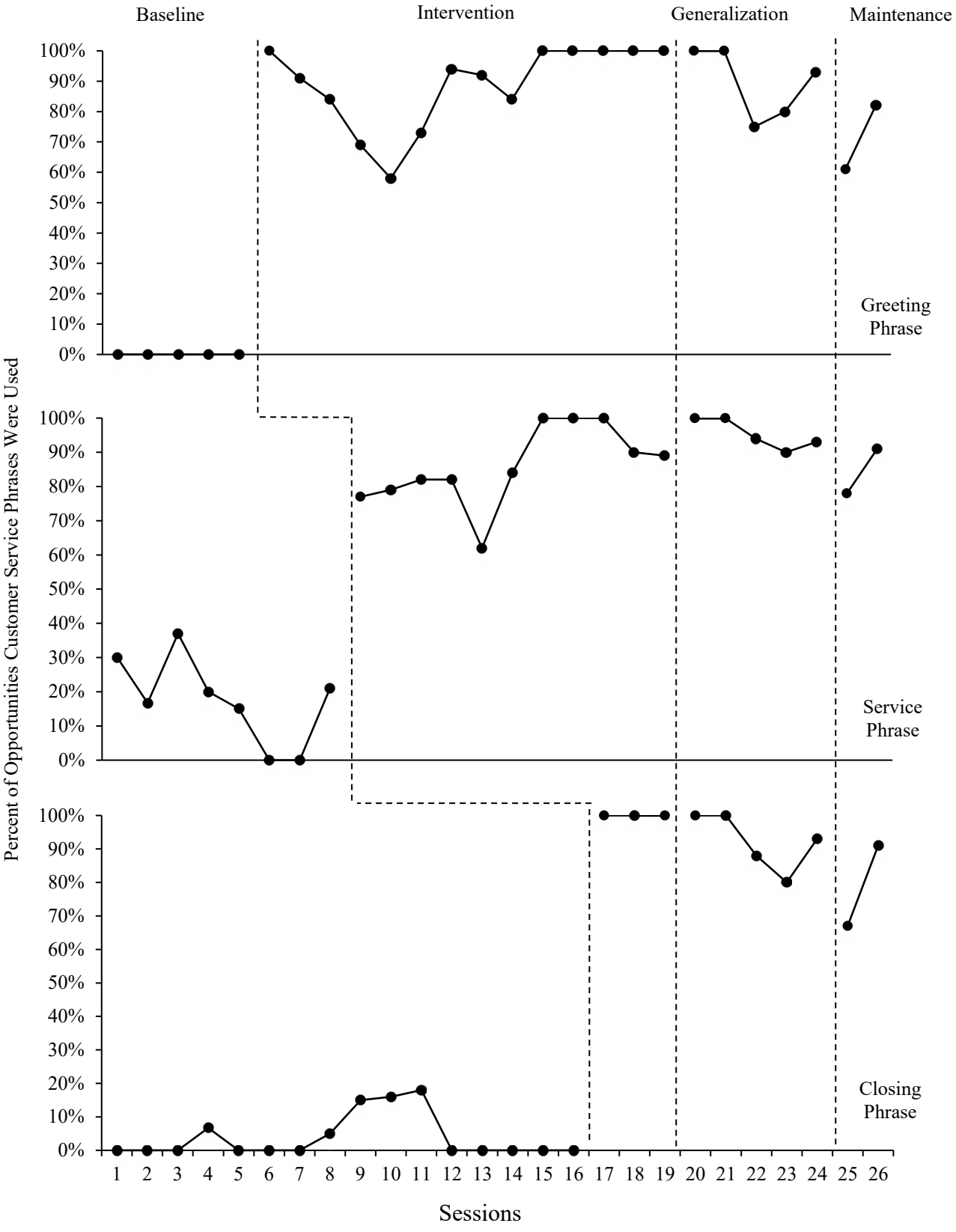


Table 10.

Summary of Visual Analysis Results

	Level		Trend		Stability				
	Baseline	Video Model	Baseline	Video Model	Baseline	Video Model	Immediacy	PND	Effect
Hank									
Greeting	0%	53% (30-85%)	Flat	Decelerating	Stable	Unstable	Abrupt	100%	Yes
Service	1% (0-10%)	80% (55-100%)	Flat	Decelerating	Stable	Unstable	Abrupt	100%	Yes
Closing	2% (0-25%)	57% (35-80%)	Flat	Accelerating	Stable	Unstable	Abrupt	100%	Yes
Stacey									
Greeting	1% (0-7%)	62% (0-100%)	Flat	Accelerating	Stable	Unstable	Not abrupt	84%	Yes
Service	40% (0-75%)	97% (79-100%)	Accelerating	Accelerating	Stable	Stable	Abrupt	100%	Yes
Closing	4% (0-20%)	100%	Decelerating	Flat	Stable	Stable	Abrupt	100%	Yes
Cole									
Greeting	12% (0-20%)	82% (60-100%)	Decelerating	Decelerating	Unstable	Stable	Abrupt	100%	Yes
Service	23% (10-50%)	82% (70-100%)	Decelerating	Accelerating	Unstable	Unstable	Abrupt	100%	Yes
Closing	1% (0-10%)	83% (40-100%)	Flat	Accelerating	Stable	Stable	Abrupt	100%	Yes
Aaron									
Greeting	0%	89% (58-100%)	Flat	Accelerating	Stable	Stable	Abrupt	100%	Yes
Service	5% (0-16%)	86% (44-100%)	Flat	Decelerating	Stable	Stable	Abrupt	100%	Yes
Closing	0%	91% (78-100%)	Flat	Accelerating	Stable	Stable	Abrupt	100%	Yes
Marshall									
Greeting	0%	89% (58-100%)	Flat	Accelerating	Stable	Stable	Abrupt	100%	Yes
Service	17% (0-37%)	86% (62-100%)	Decelerating	Accelerating	Unstable	Stable	Abrupt	100%	Yes
Closing	4% (0-18%)	100%	Flat	Flat	Stable	Stable	Abrupt	100%	Yes

Note. PND = Percent of non-overlapping data

follow-up. Marshall maintained the closing phrase at 67% during the two-week follow-up and 91% during the four-week follow-up.

Observer Impression Scale Results

The Observer Impression Scale was used to evaluate the quality of delivery of customer service phrases in the categories of tone, timing, body language, and appropriate statements. Observer Impression Scale results for all participants and conditions of the study are reported in Table 11.

Hank's tone during baseline was low with a mean score of 1.4 (range 1.0-2.0) and increased during intervention to a mean of 2.3 (range 1.0-3.0). Hank's timing during baseline was low with a mean of 1.6 (range 1.0-2.0) and increased during intervention to a mean of 3.5 (range 3.0-4.0). Hank's body language was a mean of 4.0 during baseline and intervention. Hank's appropriate statements during baseline were 1.4 (range 1.0-2.0) and increased during intervention to 3.7 (range 2.0-4.0). During the generalization condition, Hank's tone was a mean of 3.3 (range 3.0-4.0), timing 4.0, body language 4.0, and appropriate statements 4.0. During the maintenance condition, high quality of delivery of the phrases was evident for Hank as indicated by 4.0 in all four categories.

Stacey's tone during baseline was a mean score of 2.2 (range 2.0-3.0) and increased during intervention to 3.0 (range 2.0-4.0). Stacey's timing during baseline was low with a mean of 1.8 (range 1.0-2.0) and increased during intervention to a mean of 2.9 (range 2.0-4.0). Stacey's body language during baseline was a mean of 1.2 (range 1.0-2.0) and increased to 2.4 (range 1.0- 4.0) during intervention. Stacey's appropriate statements during baseline were a mean of 2.0 (range 2.0-3.0) and increased during intervention to 3.6 (range 2.0-4.0). During the generalization condition, Stacey's tone was a mean of 2.0 (range 1.0-3.0), timing 2.6 (range 2.0

Table 11.

Observer Impression Scale Results

Participant and Condition	Tone Mean (Range)	Timing Mean (Range)	Body Language Mean (Range)	Appropriate Statements Mean (Range)	Overall Mean
Hank					
Baseline	1.4 (1.0-2.0)	1.6 (1.0-2.0)	4.0	1.4 (1.0-2.0)	2.1
Intervention	2.3 (1.0-3.0)	3.5 (3.0-4.0)	4.0	3.7 (2.0-4.0)	3.4
Generalization	3.3 (3.0-4.0)	4.0	4.0	4.0	3.8
Maintenance	4.0	4.0	4.0	4.0	4.0
Stacey					
Baseline	2.2 (2.0-3.0)	1.8 (1.0-2.0)	1.2 (1.0-2.0)	2.0 (2.0-3.0)	1.8
Intervention	3.0 (2.0-4.0)	2.9 (2.0-4.0)	2.4 (1.0-4.0)	3.6 (2.0-4.0)	3.0
Generalization	2.0 (1.0-3.0)	2.6 (2.0-3.0)	3.6 (3.0-4.0)	4.0 (4.0-4.0)	3.1
Maintenance	2.0	3.0 (2.0-4.0)	3.0 (2.0-4.0)	3.0 (2.0-4.0)	2.8
Cole					
Baseline	1.8 (1.0-2.0)	2.2 (2.0-3.0)	2.6 (2.0-4.0)	2.2 (2.0-3.0)	2.2
Intervention	3.2 (2.0-4.0)	3.6 (3.0-4.0)	3.8 (3.0-4.0)	3.8 (3.0-4.0)	3.6
Generalization	3.8 (3.0-4.0)	4.0	4.0	4.0	3.9
Maintenance	4.0	4.0	4.0	4.0	4.0
Aaron					
Baseline	3.4 (2.0-4.0)	3.4 (2.0-4.0)	3.8 (3.0-4.0)	3.4 (2.0-4.0)	3.5
Intervention	3.7 (2.0-4.0)	3.6 (2.0-4.0)	4.0	3.8 (2.0-4.0)	3.8
Generalization	4.0	3.8 (3.0-4.0)	4.0	4.0	3.9
Maintenance	4.0	3.5 (3.0-4.0)	4.0	4.0	4.0
Marshall					
Baseline	1.6 (1.0-2.0)	3.0 (3.0-3.0)	2.4 (1.0-4.0)	3.6 (3.0-4.0)	2.7
Intervention	2.4 (1.0-4.0)	3.4 (2.0-4.0)	3.2 (2.0-4.0)	3.5 (2.0-4.0)	3.1
Generalization	3.0 (2.0-4.0)	3.6 (3.0-4.0)	3.8 (3.0-4.0)	4.0	3.6
Maintenance	2.5 (2.0-3.0)	3.5 (3.0-4.0)	4.0	4.0	3.5

3.0), body language 3.6 (range 3.0-4.0), and appropriate statements 4.0. During the maintenance condition, Stacey's tone was a mean of 2.0 (range 2.0-2.0), timing 3.0 (range 2.0-4.0), body language 3.0 (range 2.0-4.0), and appropriate statements 3.0 (range 2.0-4.0).

Cole's tone during baseline was a mean of 1.8 (range 1.0-2.0) and increased during intervention to 3.2 (range 2.0-4.0). Cole's timing during baseline was a mean of 2.2 (range 2.0-3.0) and increased during intervention to 3.6 (range 3.0-4.0). Cole's body language during baseline was 2.6 (range 2.0-4.0) and increased during intervention to a mean of 3.8 (range 3.0-4.0). Cole's appropriate statements during baseline was a mean of 2.2 (range 2.0-3.0) and increased during intervention to a mean of 3.8 (range 3.0-4.0). During the generalization condition, Cole's tone was a mean of 3.8 (range 3.0-4.0), timing 4.0, body language 4.0, and appropriate statements 4.0. High quality of delivery of the phrases was evident for Cole during maintenance as indicated by 4.0 in all four categories.

Aaron's tone during baseline was a mean of 3.4 (range 2.0-4.0) and increased during intervention to 3.7 (range 2.0-4.0). Aaron's timing during baseline was a mean of 3.4 (range 2.0-4.0) and increased during intervention to 3.6 (range 2.0-4.0). Aaron's body language during baseline was a mean of 3.8 (range 3.0-4.0) and during intervention increased to 4.0. Aaron's appropriate statements during baseline was a mean of 3.4 (range 2.0-4.0) and increased during intervention to 3.8 (range 2.0-4.0). During the generalization condition, Aaron's tone was 4.0, timing was 3.8 (range 3.0-4.0) body language was 4.0, and appropriate statements was 4.0. Aaron maintained high quality of delivery of the phrases as indicated by the following scores during the maintenance condition: tone 4.0, timing 3.5 (range 3.0-4.0), body language 4.0, and appropriate statements 4.0.

Marshall's tone during baseline was a mean of 1.6 (range 1.0-2.0) and increased during intervention to 2.4 (range 1.0-4.0). Marshall's timing during baseline was a mean of 3.0 (range

3.0-3.0) and increased during intervention to 3.4 (range 2.0-4.0). Marshall's body language was a mean of 2.4 (range 1.0-4.0) during baseline and increased during intervention to 3.2 (range 2.0-4.0). Marshall's appropriate statements was a mean of 3.6 (range 3.0-4.0) during baseline and decreased during intervention to a mean of 3.5 (range 2.0-4.0). During the generalization condition, Marshall's tone was a mean of 3.0 (range 2.0-4.0), timing 3.6 (range 3.0-4.0), body language 3.8 (range 3.0-4.0), and appropriate statements 4.0. During the maintenance condition, Marshall's tone was a mean of 2.5 (range 2.0-3.0), timing 3.5 (range 3.0-4.0), body language 4.0, and appropriate statements 4.0.

Social Validity Questionnaire Results

Satisfaction with the VM intervention varied across participants and settings. Table 12 summarizes the young adult social validity questionnaire results. Tables 13 summarizes the supervisor questionnaire results, and Table 14 for a summarizes the co-worker and job coach questionnaire results. Social validity questionnaire results for each group of respondents are summarized below.

Young adult questionnaire results. Hank *agreed* the VM intervention helped him do his job better and it was easy to use. He *agreed* he liked watching the videos at work and *strongly agreed* the videos helped him remember appropriate customer service phrases. Hank *agreed* the videos were fun and engaging. He *agreed* he felt supported at his place of employment. He *agreed* he would like to keep watching the videos after the research study finished. Finally, Hank *agreed* he would like to watch videos about different topics. When asked what he liked best about the VM intervention, Hank wrote, "I liked that they helped me to learn to say the phrase more to the customers and stuff." He also wrote, "It was fun and a good learning skill for me." If the study were to continue, Hank ranked who he would like to watch the videos with in the following order: (1st) research staff, (2nd) co-workers, (3rd) by himself.

Stacey *strongly agreed* the VM helped her do her job better. She *agreed* the VM intervention was easy to use, helped her to remember the customer service phrases, and she felt supported at her place of employment. However, Stacey *disagreed* she liked watching the videos at work and she found the videos fun and engaging. She *strongly disagreed* she would like to keep watching videos at work after the study finished. She also *strongly disagreed* she wanted to watch other videos about different topics. When asked what she liked best about the VM intervention Stacey wrote, "I think the videos helped me learn how to interact with the drivers," but (what she liked least) they got "redundant towards the end." If the study were to continue, Stacey ranked (1st) research staff, (2nd) by herself, and (3rd) co-worker for whom she would like to continue watching the videos.

Cole *strongly agreed* the VM intervention helped him do his job better, was easy to use, and he liked watching the videos at work. In addition, he strongly agreed the videos helped him remember the correct customer service phrase. He *strongly agreed* the videos were fun and he felt supported at his place of employment. However, Cole *strongly disagreed* he would like to keep watching the videos at work after the study finished. He also *strongly disagreed* he would like to watch other videos about different topics. In response to those two statements, Cole wrote in the margin of the questionnaire, "I feel I have learned what I need to learn." When asked what he liked best about the VM intervention, Cole wrote, "I like that it showed me what phrases to use with the customers." In the additional comments section, Cole wrote, "I think this study helped me with my social skills." If the study were to continue, Cole ranked (1st) co-workers, (2nd) research staff, and (3rd) by himself for whom he would like to watch the videos.

Aaron *strongly agreed* the VM intervention helped him do his job better and was easy to use. He also *strongly agreed* the videos helped him remember the customer service phrases to say, the videos were fun and engaging, and he felt supported at his place of employment. He

agreed he would like to keep watching the videos at work after the study finished. However, he *disagreed* he liked watching the videos at work when he watched the videos in the back room. He said, "On some days, when the videos were being used, we had to watch the videos in the back. I liked watching the videos in the front room." Aaron also *disagreed* he would like to watch videos about different topics. When asked what he liked best about the VM intervention, he said, "All the phrases I used" and "It was good using good conversation skills." When asked for suggestions for improvement, he said, "I do not know." Aaron ranked people to watch the videos with in the following order: (1st) research staff, (2nd) job coach, and (3rd) by myself.

Marshall *strongly disagreed* with all statements except one, indicating low satisfaction with the VM intervention. However, he *strongly agreed* the VM intervention was easy to use. When asked what he liked best, Marshall said, "I honestly just don't want to talk to anyone." When asked for suggestions for improvement, he said, "I don't want to talk now." Marshall wrote "none" in the additional comments section. Marshall ranked his preference of who to watch the videos with as (1st) by himself, (2nd) job coach, and (3rd) research staff.

Supervisor questionnaire results. Hank's supervisor *strongly agreed* or *agreed* with all questionnaire statements. Hank's supervisor wrote, "The video modeling intervention process was smooth and [the research team] was easy to work with. Our business can occasionally be fast paced so the video modeling was a great way to work with Hank. Members of our leadership team mentioned that Hank began to open up more and utilize the phrases from the training leading to more guest interaction."

Stacey's supervisor *strongly agreed* with all statements except she *agreed* she would like to continue using the VM intervention with the employee after the study finished. In addition, Stacey's supervisor *disagreed* Stacey appeared to like watching the videos at work. When asked what was most effective about the VM intervention, Stacey's supervisor wrote, "Using the

phrases with the volunteer drivers…greetings and smiles go a long way with our volunteers…both have greatly improved!" When asked for suggestions for improvement, she wrote, "I think it has been perfect for Stacey. Everyone is different though…I believe the videos were a wonderful success." Finally, she wrote the following additional comment: "Stacey has significantly improved her job role and seems to enjoy her role so much more! What a success…thank you all for the opportunity!"

Cole's supervisor reported he *strongly agreed* the VM intervention was easy for Cole to use, the videos appeared to help Cole remember which customer service phrases to say, and the videos appeared to be fun and engaging. Cole's supervisor *agreed* the VM intervention appeared to help Cole do his job better, Cole appeared to like watching the videos at work, and he believed Cole received adequate support at his place of employment. Finally, Cole's supervisor *agreed* he would like to continue using the VM intervention with Cole after the study finished, and he thought Cole could benefit from additional videos about different topics. When asked what was most effective about the VM intervention, Cole's supervisor wrote, "[The video model] does a great job of displaying the habits/actions that the young adult is trying to learn and implement." When asked for suggestions for improvement, he wrote, "If possible, using other employees to model the behaviors could be interesting and helpful. Also, having multiple versions of each video, so the young adult has more mentors to look to. The variation could help with distraction by rote." In the additional comments section, the supervisor wrote, "I think this is a very interesting way to help young adults develop. We have noticed great growth here."

Aaron and Marshall's supervisor was the volunteer coordinator at the nursing home. She completed one social validity questionnaire because she reported her satisfaction with the VM intervention was the same for both Aaron and Marshall. She *strongly agreed* with all

questionnaire statements. She wrote “modeling, prompting, reinforcing behaviors/expectations” as the most effective components of the VM intervention.

Co-worker or job coach questionnaire results. Hank’s co-worker who applied the VM intervention in the generalization condition *strongly agreed* with all statements except one. She *agreed* she believed Hank received adequate support at his place of employment. When asked what was most effective about the VM intervention, Hank’s co-worker wrote, “I think the video using real co-workers was probably the most effective. Seeing that people the associate sees every shift could use the same skills and phrases, in my opinion, encouraged the associate to feed confident enough to try it himself.”

Stacey’s co-worker *strongly agreed* with six out of eight questionnaire statements. She *agreed* the VM intervention was easy for her and Stacey to use together. She also *agreed* she would like to keep watching the videos at work with Stacey after the study finished. When asked what was most effective about the VM intervention, Stacey’s co-worker wrote, “Stacey being able to effectively say the phrases and take what she learned and apply to greeting our Meals on Wheels customers.” In the additional comments section, the co-worker wrote, “I met Stacey after the started the videos, and I have seen so much improvement. She greets the customers, and several have commented on how friendly she is.”

Cole’s co-worker reported she *strongly agreed* the VM intervention was easy for her and Cole to do together, she believed Cole receives adequate support at his place of employment, and she would like to keep watching the videos with Cole after the study finishes. She *agreed* the VM intervention appeared to help Cole do his job better, she liked watching the videos at work with Cole, she thought the videos were fun and engaging, and she thought Cole could benefit from additional videos about different topics. Regarding the most effective component of the VM intervention, Cole’s co-worker wrote, “I think it helped Cole, but I feel as though it also

helped remind me of different things to say as well." For suggestions for improvement, she wrote, "Maybe add a [rewards program] card giving cash back as part of the video. I thought the video did well otherwise." In the additional comments section, the co-worker wrote, "Thank you for letting me help."

Aaron's job coach *strongly agreed* with all statements except two. He *agreed* he would like to continue using the VM intervention with Aaron at work after the study finished. He also *agreed* Aaron could benefit from additional videos about different topics. Aaron's job coach wrote "the visual you have at your hands that serves as a reminder" as the most effective component of the VM intervention. Regarding suggestions for improvement, he wrote, "No, I think the way you have it is fine. You may want to offer it more than once."

Marshall's job coach was the same job coach as Aaron. The job coach completed an additional questionnaire specifically for Marshall. The job coach *strongly agreed* with all statements on the questionnaire except three. He *agreed* Marshall appeared to like watching the videos at work and he would like to continue using the VM intervention with Marshall after the study finished. The job coach *agreed* Marshall could benefit from additional videos about different topics. When asked what was most effective, the job coach wrote, "The engagement is great. The most effective thing is the importance of greeting, service, and closing phrases- what and how to use it. It helps the person think about what to say." For suggestions for improvement, he wrote, "None! Explaining the importance of greeting, service, and closing phrase is key to making this work."

Table 12.

Young Adult Social Validity Questionnaire Results

Questionnaire Statements	Hank	Stacey	Cole	Aaron	Marshall	Statement Mean
The video modeling helped me do my job better.	3.0	4.0	4.0	4.0	1.0	3.4
The video modeling intervention was easy to use.	3.0	3.0	4.0	4.0	4.0	3.6
I liked watching the videos at work.	3.0	2.0	4.0	2.0	1.0	2.4
The videos helped me remember the customer service phrases to say.	4.0	3.0	4.0	4.0	1.0	3.2
I thought the videos were fun and engaging.	3.0	2.0	4.0	4.0	1.0	2.8
I feel supported at my place of employment.	3.0	3.0	4.0	4.0	1.0	3.0
I would like to keep watching the videos at work after the research study finishes.	3.0	1.0	1.0	3.0	1.0	1.8
I would like to watch videos about different topics.	3.0	1.0	1.0	2.0	1.0	1.6
Average rating for each participant	3.1	2.4	3.3	3.4	1.4	

Note. 1.0 = Strongly disagree; 2.0 = Disagree; 3.0 = Agree; 4.0 = Strongly agree

Table 13.

Supervisor Social Validity Questionnaire Results

Questionnaire Statements	Hank's Supervisor	Stacey's Supervisor	Cole's Supervisor	Aaron and Marshall's Supervisor	Statement Mean
The video modeling intervention appeared to help the employee perform his/her job better.	4.0	4.0	3.0	4.0	3.8
The video modeling intervention was easy for the employee to use.	4.0	4.0	4.0	4.0	4.0
The employee appeared to like watching the videos at work.	3.0	2.0	3.0	4.0	3.0
The videos appeared to help the employee remember which customer service phrases to say.	3.0	4.0	4.0	4.0	3.8
The videos appeared to be fun and engaging for the employee.	3.0	4.0	4.0	4.0	3.8
I believe the employee receives adequate support at his/her place of employment.	4.0	4.0	3.0	4.0	3.8
I would like to continue using the videos with the employee at work after the research study finishes.	3.0	3.0	3.0	4.0	3.3
I think the employee could benefit from additional videos about different topics.	3.0	4.0	3.0	4.0	3.5
Average rating for each participant	3.4	3.6	3.4	4.0	

Note. 1.0 = Strongly disagree; 2.0 = Disagree; 3.0 = Agree; 4.0 = Strongly agree

Table 14.

Co-worker and Job Coach Social Validity Questionnaire Results

Questionnaire Statements	Hank's Co-worker	Stacey's Co-worker	Cole's Co-worker	Aaron's Job Coach	Marshall's Job Coach	Statement Mean
The video modeling intervention appeared to help the employee perform his/her job better.	4.0	4.0	4.0	4.0	4.0	3.8
The video modeling intervention was easy for me and the employee to use together.	4.0	3.0	4.0	4.0	4.0	3.8
I liked watching the videos at work with the employee.	4.0	4.0	3.0	4.0	3.0	3.6
The video appeared to help the employee remember what customer service phrases to say.	4.0	4.0	3.0	4.0	4.0	3.8
I thought the videos were fun and engaging.	4.0	4.0	3.0	4.0	4.0	3.8
I believe the employee receives adequate support at his/her place of employment.	3.0	4.0	4.0	4.0	4.0	3.8
I would like to keep watching the videos at work with the employee after the research study finishes.	4.0	3.0	4.0	3.0	3.0	3.4
I think the employee could benefit from additional videos about different topics.	4.0	4.0	3.0	3.0	3.0	3.4
Average rating for each participant	3.9	3.8	3.5	3.8	3.6	

Note. 1.0 = Strongly disagree; 2.0 = Disagree; 3.0 = Agree; 4.0 = Strongly agree

Chapter V: Discussion

Transition-age youth with ASD are confronted by barriers to obtaining and maintaining competitive integrated employment (CIE) in their local communities (Newman et al., 2011; Roux et al., 2013; Shattuck et al., 2012; Taylor & Seltzer, 2010). Video modeling (VM) is a well-established EBP for a variety of outcomes for individuals with ASD (Bellini & Akullian, 2007; Qi et al., 2018; Mason et al., 2012; Wang et al., 2011; Wong et al., 2015), and may be a viable way to provide training and workplace accommodations to employees with ASD. However, much of the VM employment research for individuals with ASD takes place in contrived or school-based settings, and previous research does not clarify whether VM produces similar positive effects in CIE settings. Furthermore, VM employment research has largely focused on general job tasks but not employment-related social skills necessary for customer service. Enhancing employment-related social skills of individuals with ASD in community employment settings is important for job satisfaction and retention. The purpose of this study was to evaluate effects of a VM intervention to improve job-specific customer service phrases by individuals with ASD in CIE and work-based learning settings.

Five young adults, ages 18-26 years, participated in this study at an amusement park, meal delivery organization, movie theater, and nursing home. The required job tasks varied according to the employment setting, but all jobs required direct interactions with customers or other individuals in the employment setting (e.g., nursing home residents). Video models were filmed at each employment setting and focused on using greeting, service, and closing phrases contextualized to the required job tasks. A multiple baseline across behaviors design (Gast et al., 2018) was used to measure participant responding to the VM intervention with customer service phrases serving as the target behaviors. Co-workers, job coaches, and supervisors applied the VM intervention with the young adults during the generalization phase. Satisfaction with the VM

intervention was assessed via social validity questionnaires completed by the young adults and relevant stakeholders at the conclusion of the study.

The first research question asked whether a VM intervention could increase the verbalization of job-specific customer services phrase for young adults with ASD in community employment settings. Results indicated strong evidence of a functional relation between the VM intervention and customer service phrases for all participants. Summative visual analysis indicated there were consistent changes in data for all 15 potential demonstrations of an experimental effect (Barton et al., 2018). Further, an abrupt change was evident for 14 of 15 (93%) of the potential effects across the study. Intervention data were stable for 10 of 15 (67%) behaviors. These positive results are consistent with findings in the VM literature for contrived, school-based, and work-based learning employment experiences (e.g., Allen et al., 2012; Alexander et al., 2013; Van Laarhoven et al., 2014; Yakubova & Taber-Doughty, 2017). Findings also indicated positive effects were obtained for different job-specific customer service phrases for all participants, and positive effects were obtained across four different employment settings. These findings show VM improved verbalization of job-specific customer service phrases across diverse employment settings.

The second research question asked whether VM enhanced the quality of customer service phrases used by young adults with ASD in community employment settings. Results of the Observer Impression Scale indicated participants improved their tone, timing, body language, and appropriate statements after receiving VM. However, quality of the delivery of phrases varied across participants and conditions. For example, Hank, Cole, and Aaron increased their tone from baseline to maintenance conditions. Conversely, Stacey's tone decreased during generalization and maintenance conditions, and Marshall demonstrated little change in his tone of voice throughout the study. Differences in tone may be attributed to VM intervention effects

for some but not all participants. However, all participants improved the timing of delivery of phrases after receiving VM. Some participants (i.e., Stacey, Cole, Marshall) improved in body language after VM whereas other participants (i.e., Hank and Aaron) did not demonstrate a need in this category prior to VM. Further support for the potential for VM to improve quality of interactions was evidenced by increased verbalization of appropriate statements throughout the study for all participants. Overall, results indicated VM improved quality of delivery of the customer service phrases in the four categories evaluated by the Observer Impression Scale. This is noteworthy because customer overall satisfaction is correlated with their perceptions about interactions with employees (Byron et al., 2007; Sundaram & Webster, 2000). These findings corroborate previous research that VM can enhance the quality of employment-related social skills of individuals with developmental disabilities (Gilson & Carter, 2018).

The third research question asked to what extent natural intervention agents could apply the VM intervention with fidelity during the generalization phase. Natural supports involve work site personnel providing supports to employees with disabilities with a focus on enhancing social integration (Storey, 2003). Results indicated co-workers, job coaches, and supervisors applied the VM intervention with high fidelity and minimal training. This indicates natural intervention agents consistently applied the VM intervention and reflects high feasibility of VM in CIE contexts. In addition, the generalization phase used VM on equipment already available in the workplace. Technology is often available in employment settings and can be used to support the vocational success of employees with ASD (Nicholas et al., 2015; Wehmeyer et al., 2006). Natural intervention agents, such as co-workers, can facilitate the use of technology as a natural workplace support. Accordingly, VM appears an effective and feasible way to support employees with ASD.

The fourth research question asked to what extent job-specific customer service phrases were maintained following VM intervention cessation. The maintenance of customer service phrases varied across participants and within participants. For example, Hank maintained the service phrase but not greeting or closing phrases. Hank's maintenance of the service phrase (i.e., "Would you like a map?") might be explained by his close proximity to a large stack of maps at the podium where he collected tickets. The maps may have functioned as a visual support that reminded him to use the service phrase. Stacey did not maintain her customer service skills during the two-week follow-up but improved at four-week follow-up. This could be related to the Meals on Wheels organization changing buildings after the final generalization session and before the first maintenance session. Stacey reported she was unaccustomed to the new building during the first maintenance session but felt more comfortable during the second session. Cole maintained the greeting and service phrases at relatively high levels but maintained the closing phrase at slightly lower levels. Aaron and Marshall maintained all three phrases at high levels. The varied maintenance of the customer service phrases across and within participants may be attributed to individual participant characteristics and different demands of each employment setting. Maintained performance suggests VM was an effective training method that can be withdrawn after mastery for some participants. Participants with low maintenance suggests VM may serve as a reasonable workplace accommodation beyond the study for those participants. Reasonable workplace accommodations are often long-term supports that typically are not removed (Schartz, Hendricks, & Blanck, 2006).

Finally, the fifth research question sought to evaluate social validity of the VM intervention. Young adults reported overall high satisfaction with the VM intervention. For example, four participants (80%; Hank, Stacey, Cole, and Aaron) reported the VM intervention helped them remember customer service phrases and do their job better. Marshall was the only

participant who reported overall low satisfaction with the VM intervention despite improved customer service skills. Three of the five young adults (60%; Stacey, Cole, and Marshall) reported they did not want to keep watching the videos after the study finished and did not want to watch videos about different topics. Some participants reported video content to be redundant. This is likely a reflection of the focus on very specific customer service phrases. Therefore, varied videos (e.g., different models) targeting more diverse and complex employment-related social skills (e.g., brief social conversations with co-workers) may increase some aspects of VM social validity.

Supervisors reported overall high satisfaction with the VM intervention. For example, all supervisors allowed participants to watch the VM after clocking in for their shift and allowed co-workers to apply the VM intervention. Supervisors agreed young adults could continue the VM intervention after study cessation. Similarly, all supervisors agreed or strongly agreed young adults could benefit from additional videos for different skills. Discrepancies between supervisor and young adult social validity results suggests supervisors valued the VM intervention more than young adult participants. Likewise, co-workers and the job coach reported overall high satisfaction with the VM intervention. There were no difficulties finding co-workers willing to serve as intervention agents. The nursing home job coach also willingly applied the VM intervention. Several co-workers noted the applicability of the videos for employees without disabilities. For example, Hank's amusement park co-workers commented the videos could be used for training other employees. The movie theater co-worker also said watching the videos reminded her to use different phrases when serving patrons, suggesting she also benefited from the VM.

Lastly, three of the five young adults (60%; Hank, Stacey, and Aaron) ranked the research staff as their preferred intervention agent. This suggests young adult participants found

interacting with the research staff to be overall positive and potentially reinforcing. This finding is perhaps not surprising given in-situ behavioral observations contributed to interactions between researchers and participants. This study used researchers as intervention agents to ensure the study did not interfere with required job duties. Cole ranked a co-worker as his first choice to watch the videos, which suggests social positive reinforcement from co-workers may influence responding to VM by some individuals with ASD. However, Marshall indicated he would prefer to watch videos alone, which suggests some individuals with ASD may independently use VM if provided with a library of relevant videos.

Limitations

Results from this study should be considered in light of several limitations. First, improved work performance and customer service skills may have been partially attributed to the participants' awareness of researchers observing them (Gast & Ledford, 2018; Kazdin, 1979). Relatedly, data collectors served dual roles as intervention agents during the VM intervention. Three data collectors alternated observations to minimize potential effects associated with positive interactions between researchers and participants. Data collectors tried to be unobtrusive during data collection, but rapport developed throughout the study. The study required numerous observations in each setting, and researchers intended to maintain positive relationships with participants. Future researchers may consider less obtrusive observations using technology (e.g., video recordings) or consider using unknown data collectors. Future studies also might recruit co-workers or supervisors as intervention agents to examine the effects of researcher rapport on participant responding to VM.

An additional limitation relates to experimental procedures. There were two instances of premature advancement to a subsequent behavior. The first occurred during the greeting phrase for Aaron. The primary researcher advanced based on three data collection sessions that met the

≥80% criterion, but criterion was not achieved in three consecutive sessions. The second instance occurred during the serving phrase for Cole. Cole was observed to say frequent services phrases that were contingent on specific customer requests. For example, some customers might ask for popcorn, which often was followed by Cole's response, "What size popcorn would you like?" However, because the opportunities were inconsistent and affected data representation, an ad hoc change entailed targeting a customer service phrase to be used for every customer (i.e., "Would you like anything else?"). The decision to advance to the closing phrase was based on data interpretations that included all service phrases rather than the ad hoc phrase. Despite these limitations, functional relations between the VM intervention and customer service phrases were established for Aaron and Cole as evident by three demonstrations of an effect at three different points in time (Barton et al., 2018).

A third limitation relates to experimental design decisions for Hank at the amusement park. The a priori mastery criterion (≥80% or higher for three consecutive sessions) was modified for each of the three behaviors. This decision was justified in two ways. First, customer interactions were very brief based on the large number of visitors entering the park and employer expectations to keep entry lines moving quickly. Second, observations of co-workers revealed greeting, service, and closing phrases were not used consistently due to speed of service. Specifically, Hank's co-workers used the targeted phrases approximately 50% of interactions with park visitors. Thus, mastery criterion was reduced to 50% for two consecutive sessions. Despite these modifications, data still demonstrated three experimental effects (Barton et al., 2018). The decision to advance Hank to the generalization condition for closing phrases is an additional limitation. Hank achieved the modified mastery criterion for the closing phrase in four sessions, resulting in four data points in this condition. According to quality standards for single case experimental research (Kratochwill et al., 2010), a minimum of five data points per phase is

required to meet evidence standards without reservations. The intervention condition was continued despite mastery being achieved in four sessions (i.e., an immediate effect). Subsequent responding began trending downward. The researcher decided to advance to the generalization phase before the park season ended. These limitations may affect degree of confidence about the presence of a functional relation for this participant.

Implications for Practice and Research

This study has implications for job coaches, employers, employment specialists, and vocational rehabilitation (VR) counselors who hire, train, and support employees with ASD. The positive findings suggest VM is a viable way to teach customer service skills in community employment settings. Importantly, relatively brief videos at work to improve job performance can and should be considered a resource and reasonable workplace accommodation. This study design required prolonged intervention phases with multiple teaching sessions after the participant mastered the greeting or service phrase. However, generalization and maintenance data for closing phrases (which were the shortest and had the fewest intervention sessions) indicated acceptable levels of responding were obtained. This suggests that professionals may use VM for some employees who quickly master, generalize, and maintain targeted skills. However, some individuals may require ongoing training or periodic training to boost or maintain performance. Future research that investigates these issues will reveal how professionals can better use VM to train and support employees with ASD in CIE settings.

Relevant stakeholders (e.g., employers, VR counselors, job coaches) can be trained to prepare and apply a VM intervention to benefit employees with ASD. Such videos can be stored and used by any employee regardless of disability status. For example, supervisors could create a library of videos to be used strategically for employees who need additional training or daily support. Supervisors may find VM interventions to be more cost-effective and straightforward

compared to other training methods. In addition, VM may promote more independence and be less stigmatizing than a job coach. Accordingly, future researchers should evaluate methods for training supervisors and other authentic personnel to use VM technology. Future researchers may also examine the cost benefit analysis (Levin & McEwan, 2000; Schartz et al., 2006) of VM as a means of further establishing social validity.

An additional implication for practice relates to the use of co-workers as authentic intervention agents. Support from co-workers may promote positive workplace relationships and employee satisfaction (Chadsey & Beyer, 2001; Cimera, 2001; Hagner & Cooney, 2003). The current study did not measure relationship satisfaction between employees with ASD and their co-workers. However, future researchers may more closely evaluate the relationship formed between co-workers during implementation of an intervention such as VM. Supervisors might also consider providing incentives to co-workers who volunteer to assist co-workers with ASD. An additional aspect of this work might investigate whether such roles promote formal and informal social relationships (e.g., friendships within and beyond the workplace) between co-workers with and without ASD.

The sequence of instruction may have influenced some participants' responding. For example, Stacey's use of the service phrase increased upon implementation of the first video. This may have been attributed to the interrelated nature of greeting and service phrases. That is, Stacey may have been more likely to use a service phrase after a greeting phrase because volunteer drivers responded well to her greetings. Individuals with ASD report wanting to interact with others at work but also report challenges with the skills needed to (Müeller, 2003). Future researchers might investigate varying the sequence of job-specific phrases taught (e.g., teach the closing phrase first, followed by the service phrase, and finally greeting phrase) to limit influences between similar phrases.

Future researchers might also examine employment-related social skills beyond the specific customer service skills targeted in this study. Customer service phrases are an important aspect of customer service skills, but a variety of other social skills are also needed to improve employment outcomes for this population (Hendricks, 2010; Lee & Carter, 2012; Wilczynski et al., 2013). For example, enhancing interpersonal skills and forming positive relationships with co-workers appears to be a limited topic of empirical investigation. Young adults with ASD have reported limited appropriate social skills needed for meaningful interactions with co-workers and supervisors (Müller et al., 2003). These needs likely function as obstacles to successful employment. Consequently, employment-related social skills studies may focus on improving social conversations during non-work times, ending a conversation, asking for help, and requesting a change in schedule, among others. Studies focused on such topics could reveal whether and to what extent job satisfaction of individuals with ASD is affected by positive workplace relationships.

Finally, additional research should also examine the effects of VM on job skills for individuals whose jobs are matched to their strengths, interests, and preferences. This study recruited employed individuals with ASD, and the primary researcher was not involved in the job obtainment process. No participant was employed in the same job or career as described in his or her transition plan, but it is unclear whether the transition plans accurately reflected their respective employment-related vision and goals. It therefore seems unclear whether VM would produce similar results for job skills taught in highly preferred workplace environments. Employees with ASD who enjoy their work (because it aligns with their strengths and interests) may be more responsive to VM used for training purposes or VM as a reasonable workplace accommodation. Accordingly, future researchers should consider examining how alignment

between employee strengths, interests, and preferences affect acquisition and mastery of basic and more complex employment-related social skills.

Conclusion

Employment is vital to increased community integration and overall quality of life for individuals with and without disabilities (Carter et al., 2013; Jahoda, 1984). Employment is particularly important for individuals with disabilities including ASD. Transition-age youth with ASD face unique barriers to positive employment experiences during their transition to adulthood (Hendricks & Wehman, 2009; Lipscomb et al., 2017a; Lipscomb et al., 2017b; Newman et al., 2011). This may be partially attributed to assumptions and stereotypes that individuals with ASD are not well-suited for jobs that require social interactions. Evidence indicates individuals with ASD can be successfully employed in a variety of jobs and often have strengths that are desirable to employers (López & Keenan, 2014; Lorenz et al., 2016). However, many employed individuals with ASD will likely need job-specific training and reasonable workplace accommodations. Video modeling is an EBP for learners with ASD (Wong et al., 2015) and may be an effective and efficient way to train and accommodate employees with ASD. However, the meta-analysis conducted as part of this dissertation research revealed little evidence about the effects of VM on employment-related social skills of young adults with ASD in CIE settings. The purpose of this dissertation was to investigate the effects of VM on customer service skills of young adults with ASD in community employment settings.

A multiple baseline across behaviors design was used to evaluate the efficacy of a VM intervention to increase job-specific customer service phrases. The target behaviors were greeting, service, and closing phrases contextualized to job tasks required at the various employment settings. Five young adults with ASD participated at an amusement park, meal delivery organization, movie theater, or nursing home. Researchers served as intervention agents

during the intervention condition. Co-workers, job coaches, and supervisors applied the VM intervention during the generalization condition. Tone, timing, body language, and appropriate statements were measured with the Observer Impression Scale to evaluate qualities of spoken phrases. Maintenance was assessed at two- and four-weeks following intervention cessation. Social validity and feasibility of the VM intervention was assessed via questionnaire.

Results indicated a functional relation between the VM intervention and job-specific customer service phases for all participants. The Observer Impression Scale indicated several qualities of the participants' spoken phrases also improved upon receiving the VM intervention. Results indicated VM can be applied with high fidelity by natural intervention agents in community employment settings. This means VM may be an efficient way to support individuals with ASD employed in CIE contexts. Maintenance varied across and within participants but was generally positive. Accordingly, VM can be effective as a relatively brief training method or reasonable workplace accommodation. Social validity of the VM intervention was overall high among young adults, co-workers, job coaches, and supervisors. Supervisors were most interested among all participants in continuing the VM intervention.

This study is consistent with previous research that indicated VM is effective to improve a variety of outcomes for individuals with ASD (Bellini & Akullian, 2007; Qi et al., 2018; Mason et al., 2012; Wang et al., 2011; Wong et al., 2015). Results of this study indicated VM is a viable means to enhance customer service skills of individuals with ASD who are employed in customer service positions or jobs that require interactions. These findings contribute to the ASD and employment literature to enhance postsecondary outcomes for young adults with ASD and have several implications. Employees with ASD will likely benefit from use of educational interventions, such as VM, as a training method or reasonable workplace accommodation. Therefore, VR counselors, employment specialists, job coaches, employers, and other relevant

stakeholders should learn to use VM to support employees with ASD. Researchers should consider dissemination studies that teach employers about employees with ASD and how to create, apply, and evaluate the effects of VM on contextually-relevant employment skills. Researchers should also consider examining whether the effects of VM are amplified when employment is matched to the person's strengths, interests, and preferences. Given the relatively high feasibility of VM and strong evidence of positive effects, it seems this intervention can contribute to improved employment outcomes for individuals with ASD.

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APPENDIX A

RECRUITMENT FLYERS

KU JUNIPER GARDENS CHILDREN'S PROJECT
Life Span Institute

University of Kansas
Juniper Gardens Children's Project
Autism & Employment Study

Are you a young adult age 16 or older with a diagnosis of an Autism Spectrum Disorder (ASD)?

Do you already have a job or wish to obtain a job in your local community?

Could you benefit from social skill support at your place of employment?

Juniper Gardens Children's Project at the University of Kansas is seeking individuals age 16 or older with ASD to participate in a research study. Adolescents or young adults who already have a job or desire to obtain a job in their local communities are eligible to participate. Individuals will work 3-5 days per week for 5-10 weeks beginning in Summer and/or Fall 2018. Young adults will be supported in their social skill development at work through the use of video modeling, self-monitoring, and/or online instructional modules.

If interested, please contact Leslie Bross, KU Special Education Doctoral Candidate, at (816) 719-6546 or leslie.bross@ku.edu.

444 Minnesota Avenue, Suite #300 – Kansas City, KS 66101
(913) 321-3143 – jgcp.ku.edu – asdonthego.ku.edu

KU JUNIPER GARDENS CHILDREN'S PROJECT
Life Span Institute

University of Kansas
Juniper Gardens Children's Project
Autism and Employment Study

Are you a local business owner or manager?

Do you currently employee individuals with Autism Spectrum Disorder (ASD) who are age 16 or older?

Would you like to support the social skill development of an employee with ASD?

Juniper Gardens Children's Project at the University of Kansas is seeking collaborative business partnerships with local business owners or managers to participate in a research study. Business sites that currently have employees with ASD or are seeking employees with ASD are eligible to participate. Adolescents or young adults with ASD will work 3-5 days per week for 5-10 weeks beginning in Summer and/or Fall 2018. Individuals will be supported in their social skill development at work through the use of video modeling, self-monitoring, and/or online instructional modules.

If interested, please contact Leslie Bross, KU Special Education Doctoral Candidate, at (816) 719-6546 or leslie.bross@ku.edu.

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APPENDIX B

CONSENT FORMS AND ASSENT PROCEDURES

KU JUNIPER GARDENS CHILDREN'S PROJECT
Life Span Institute

444 Minnesota Avenue
Suite 300
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ADOLESCENT AND YOUNG ADULT CONSENT FORM
I-CONNECT PLUS Employment Study

Title: *I-CONNECT PLUS: Enhancing Community Participation for Adolescents and Adults with ASD Through Employment Experiences*

Dear Adolescent or Young Adult,

The Institute for Life Span Studies at the University of Kansas supports the practice of protection for human participants taking part in our research programs. The following information is provided for you to decide whether you wish to participate in the present study.

What is the purpose of the project?
The purpose of this project is to use a combination of video modeling, self-management, and online instruction to advance current knowledge and the state of practice related to teaching *social communicative skills, problem solving, and job skills* in community-based employment settings to adolescents and young adults with autism spectrum disorder (ASD) or other disabilities. These skills will allow the participants to improve their social and job task skills in employment settings. In addition, these skills could lead to establishing and maintaining gainful relationships with employers, co-workers, and members of the community. Specifically, this project will address the following research objectives:

1) Teach communicative skills, problem solving, and job skills to improve job performance.
2) Establish and collect data on training procedures for community-based employment settings to increase independence and social engagement.
3) Implement individualized interventions targeting interpersonal skills and independence in employment settings using video modeling, self-management, and instructional modules.

What are the behavioral assessments?
Behavioral assessments in this study will include multiple measures: interviews, direct observation, and rating scales. All interviews and observations will be conducted by a project staff trained in the assessments. The planning interview will be conducted with you and your employer in order to gather preliminary information regarding goals for social communication skills in employment settings. This interview will require approximately 1 hour of your time. Sample topics of the interview include: (1) your goal for job-specific social skills; (2) strengths and weakness that may influence job performance; and (3) selection of specific interpersonal skills for improving interactions with managers, co-workers, and customers.

In order to assess social competence, you may be asked to complete rating scales (e.g., *Arc's Self-determination Scale*, *Social Responsiveness Scale*, *Behavior Rating Inventory of Executive*

Function, Adaptive Behavior Assessment System, etc.) which will require approximately 1 hour of your time. You may be asked to complete these rating scales both before and after participation in the study. Your parent/guardian may be asked to complete this rating scale as well.

In order to assess your levels of independence and interpersonal skills at work, direct observations in the employment setting will be conducted to measure levels of participation/ social engagement.

Social validity will be measured through (1) checklists about video modeling, self-management, and instructional modules, and (2) weekly consultations about the implementation of the interventions.

What are the study procedures in which you will be involved?

___ Completion of pre-assessments and interviews to gather information to set goals for social communicative skills, problem solving, and job skills in community-based employment settings.
___ Completion of applicable instructional modules with video modeling.
___ Use of mobile device (i.e. tablet, smartphone) to self-monitor your use and implementation of targeted skills.
___ Completion of the checklists to measure your opinion of the interventions which will require approximately 10 minutes.
___ Attendance at sessions one to five times per week to complete instructional modules, participate in skill coaching sessions, and/or utilize self-monitoring of targeted skills with project staff and/or designated employer in the employment setting.

You will receive a $100 debit card for your participation and completion of this study. You will receive the gift card at the end of the study. **Investigators may ask for your social security number in order to comply with federal and state tax and accounting regulations.**

What are the behavioral interventions?

Behavioral interventions are based on recommended practices, and may include video modeling, self- monitoring, and/or instructional modules. Targeted skills will be identified based on the information obtained through interviews and assessments, as well as your self-indicated goals. Behavioral interventions are described below and the specific ones you are being asked to participate in are indicated by a check:

____ ***Video Modeling***: The video modeling intervention in this project is a short video that shows you what to do in different situations specific to the employment setting. You will watch the short videos on a laptop or desktop at the employment setting. The videos will be filmed at your employment setting and will be created specifically for you with co-workers serving as peer models. Example situations that the videos may cover are how to give a greeting, service, and closing phrase to customers or how to initiate a conversation with a co-worker.

_____ ***Self-Monitoring***: For the self-monitoring stage of the project, you would be issued an ***I-CONNECT PLUS*** mobile device. This device will either be a small tablet (similar to a personal digital assistant) or a smart phone. You will use the device to occasionally self-monitor the targeted skills you are working on as they relate to social communication, problem solving, and job skills. The device will send you a reminder (e.g. light up, beep, vibrate) to answer questions regarding your performance of targeted skills. This data would then be communicated via text messaging/email to your employer and/or project staff. This information then helps the employer and/or project staff to monitor your progress and provide you with feedback.

You will not be liable for damage or loss of the devices (i.e., tablet, smartphone), however, you will be asked to sign an agreement that outlines usage and guidelines. The use of the devices will be closely monitored and the device will remain the property of the University.

___ ***Instructional Modules***: You will be asked to complete instructional modules as determined by the pre-assessments, interviews, and your indicated goals which may include skills in some or all of the areas including social communication, problem solving, and job skills (e.g. starting conversations, expressing interests in others, following instructions, requesting help, decision making with co-workers, navigating environments etc.). Lessons will be accessed online, via computers and/or mobile devices with internet capabilities and will be completed in a face-to-face session with project staff or the employer, or on your own in a location of your choice. Lessons will include activities such as sample scripts, video models, and task analyses. The lessons will be interactive and include graphics, animations, and questions throughout. We anticipate that each module will take approximately 30 minutes to complete.

What are the benefits and risks of you participating in the project?
All persons may benefit from participation in the ***I-CONNECT PLUS*** intervention. We expect to see improvements in overall levels of independence, social communication, and job skills as well as improved interactions with managers, co-workers, and community members. One potential risk is participation in this study will disclose your disability to your employer if you have not yet disclosed. Therefore, you must be willing to disclose your disability to participate in this study. We foresee minimal educational or psychological risks for you by participating. One risk is the limit to confidentiality relevant to mandated reporting should any concerns about potential harm to self or others be identified.

What are confidentiality procedures?
All information obtained from assessment and interventions pertaining to you will be kept confidential in a locked file cabinet at the Juniper Gardens Children's Project offices, including all video recordings. Digitally stored information will be stored on a secured, encrypted server that is password protected. You will be assigned a participant number and all information pertaining to you will be identified by this number only. Information from assessments or observations will be viewed only by project staff, parents, and the employer and will not be shared unless upon your request in verbal or written reports to agencies that assist you.

Limits to this confidentiality include situations where we learn that you are danger of hurting yourself or another person, if you are in danger of being hurt by someone else or if content indicates any illegal activity. If this occurs, we will let you and appropriate community professionals know about the situation for your well-being and safety.

If you agree to participate, can you change your mind later?
You should be aware that even if you agree to participate, you are free to withdraw from the study at any time. If you do withdraw from this study, it will not affect your relationship with the Juniper Garden's Children's Project, nor the University of Kansas.

If you cancel permission to use your information, the researchers will stop collecting additional information about you. However, the research team may use and disclose information that was gathered before they received your cancellation, as described above. All information pertaining to you will be stored as described above for 5 years after project.

If you agree to participate, please sign this form and return it to Leslie Bross. Should you desire any additional information or have questions, please contact Leslie at the number or e-mail address listed below.

Sincerely,

Leslie Bross, M.S.
I-Connect Plus Project Manager
leslie.bross@ku.edu
(816) 719-6546

Howard Wills, Ph.D., BCBA
Principal Investigator
hpwills@ku.edu
(913) 321-3143

Title of Project: *I-CONNECT PLUS: Enhancing Community Participation for Adolescents and Adults with ASD Through Employment Experiences*

PARTICIPANT CERTIFICATION (Adolescent or Young Adult):
If you agree to participate in this study please sign where indicated, then tear off this section and return it to the investigator. Keep the consent information for your records.

I have read this Consent and Authorization form. I have had the opportunity to ask, and I have received answers to, any questions I had regarding the study and the use and disclosure of information about me for the study. I agree to take part in this study. **By my signature I affirm that I am at least 18 years old, am my own legal decision maker, and have received a copy of this Consent and Authorization form.** I understand this means I will participate in interviews, assessments, and the following (as indicated by a check):

___ Video modeling
___ Self-monitoring
___ Completion of instructional modules

I understand that I will be observed and that information will be used to help the facilitator and KU staff support me to be independent and engaged in the community-based employment setting. Intervention will be provided for social communication, problem solving, and/or job skills in employment settings. I may be audio-taped and/or video-taped in all sessions to monitor progress, and I will be given progress on my performance. Please initial/sign below for permission.

___ I give permission for videos involving me to be used for training purposes and for presentations of research outcomes.
___ I give permission for you to obtain information from my parent/guardian_____, throu
___ I give permission for you to share information with my parents/guardian.

_____ _____ _____
Parent(s)' first and last name Parent(s)' Phone Number Parent(s)' email

___ I give permission for you to share information with my employer:

_____ _____ _____
Employer's first/last name Phone Number E-mail

I also understand that my permission allows for observation of my performance both live and through video recording.
If I am a person with ASD, I will provide confirmation of the diagnosis of ASD from a prior clinical evaluation or educational diagnosis.

_____ _____
Print first and last name Signature

_____ _____ _____
Date Email Phone

I understand that if I have any additional questions about my rights as a research participant, I may call (785) 864-7429 or write the Human Research Protection Program (HRPP), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7563, or email irb@ku.edu.

KU JUNIPER GARDENS CHILDREN'S PROJECT
Life Span Institute

444 Minnesota Avenue
Suite 300
Kansas City, KS 66101
Voice (913) 321-3143
FAX (913) 371-8522

PARENT/GUARDIAN CONSENT FOR MY CHILD'S PARTICIPATION
I-CONNECT PLUS Employment Study

Title: *I-CONNECT PLUS: Enhancing Community Participation for Adolescents and Adults with ASD Through Employment Experiences*

Dear Parent/Guardian,

The Institute for Life Span Studies at the University of Kansas supports the practice of protection for human participants taking part in our research programs. The following information is provided for you to decide whether you wish your child to participate in the present study.

What is the purpose of the project?
The purpose of this project is to use a combination of video modeling, self-management, and online instruction to advance current knowledge and the state of practice related to teaching *social communicative skills, problem solving, and job skills* in community-based employment settings to adolescents and young adults with autism spectrum disorder (ASD) or other disabilities. These skills will allow the participants to improve their social and job task skills in employment settings. In addition, these skills could lead to establishing and maintaining gainful relationships with employers, co-workers, and members of the community. Specifically, this project will address the following research objectives:

1) Teach communicative skills, problem solving, and job skills in an effort to allow adolescents and young adults with ASD to improve their job performance.
2) Establish and collect data on training procedures for community-based employment settings to increase independence and social engagement.
3) Implement individualized interventions targeting interpersonal skills and independence in employment settings using video modeling, self-management, and instructional modules to provide consultation and feedback to participants.

What are the behavioral assessments?
Behavioral assessments in this study will include multiple measures: child interviews, direct observation, and rating scales. All interviews and observations will be conducted by a project staff trained in the assessments. The planning interview will be conducted with your child (and maybe you as a parent) and their employer in order to gather preliminary information regarding goals for social communication skills in employment settings. This interview will require approximately 1 hour of your child's time. Sample topics of the interview include: (1) their goals for job-specific social skills; (2) strengths and weakness that may influence job performance; and (3) selection of specific interpersonal skills for improving interactions with managers, co-workers, and customers.

In order to assess social competence, you and your child may be asked to complete rating scales (e.g. *Arc's Self-determination Scale*, *Social Responsiveness Scale*, *Behavior Rating Inventory of Executive Function*, *Adaptive Behavior Assessment System*, etc.) which will require approximately 1 hour of time. You may be asked to complete these rating scales both before and after their participation in the study.

In order to assess your child's levels of independence and interpersonal skills at work, direct observations in the employment setting will be conducted to measure levels of participation/ social engagement.

Social validity will be measured through (1) checklists about video modeling, self-management, and instructional modules, and (2) weekly consultations about the implementation of the plan.

What are the study procedures in which your child will be involved?

___ Completion of pre-assessments and interviews to gather information to set goals for social communicative skills, problem solving, and job skills in community-based employment settings.
___ Completion of applicable instructional modules with video modeling.
___ Use of mobile device (i.e. tablet, smartphone) to self-monitor your child's use and implementation of targeted skills.
___ Completion of the checklists to measure your child's opinion of the intervention which will require approximately 10 minutes.
___ Attendance at sessions one to five times per week to complete instructional modules, participate in skill coaching sessions, and/or utilize self-monitoring of targeted skills with project staff and/or designated employer in the employment setting.

Your child will receive a $100 debit card for participation and completion of this study. He/she will receive a debit card at the end of the study. **Investigators may ask for your child's social security number in order to comply with federal and state tax and accounting regulations.**

What are the behavioral interventions?

Behavioral interventions are based on recommended practices, and may include video modeling, self-monitoring, and/or instructional modules. Targeted skills will be identified based on the information obtained through interviews and assessments, as well as his/her self-indicated goals. Behavioral interventions are described below and the specific ones your child is being asked to participate in are indicated by a check:

____ ***Video Modeling***: The video modeling intervention in this project is a short video that shows your child what to do in different situations specific to the employment setting. Your child will watch the short video on a laptop or desktop at the employment setting. The videos will be filmed at the employment setting and will be created specifically for your child. Example situations that the videos may cover are how to give a greeting, service, and closing phrase to customers or how to initiate a conversation with a co-worker.

___ ***Self-Monitoring***: For the self-monitoring stage of the project, your child would be issued an ***I CONNECT PLUS*** mobile device. This device will either be a small tablet (similar to a personal digital assistant) or smartphone. Your child will use the device to occasionally self-monitor the targeted skills he/she is working on as they relate to social communication, problem solving, and job skills. The device will send a reminder (e.g. light up, beep, vibrate) to answer questions regarding individual performance of targeted skills. This data would then be communicated via

text messaging/email to his/her employer and/or project staff. This information then helps the employer and/or project staff to monitor his/her progress and provide him/her with feedback.

Your child will not be liable for damage or loss of the devices (i.e., tablet, smartphone), however, he/she will be asked to sign an agreement that outlines usage and guidelines. The use of the devices will be closely monitored and the device will remain the property of the University.

___ ***Instructional Modules***: Your child will be asked to complete instructional modules as determined by the pre-assessments, interviews, and his/her indicated goals which may include skills in some or all of the areas including social communication, problem solving, and job skills (e.g. starting conversations, expressing interests in others, following instructions, requesting help, decision making with co-workers, navigating environments, etc.). Lessons will be accessed on-line, via computers and/or mobile devices with internet capabilities and will be completed in a face-to-face session with project staff or the employer, or in a location of your child's choice. Lessons will include activities such as sample scripts, video models, and task analyses. The lessons will be interactive and include graphics, animations, and questions throughout. We anticipate that each module will take approximately 30 minutes to complete.

What are the benefits and risks of you participating in the project?
All persons may benefit from participation in the ***I-CONNECT PLUS*** intervention. We expect to see improvements in overall levels of independence, social communication, and job skills as well as improved interactions with managers, co-workers, and community members. One potential risk is participation in this study will disclose your child's disability to the employer if he/she has not yet disclosed. Therefore, your child must be willing to disclose his/her disability to participate in this study. We foresee minimal educational or psychological risks for your child by participating. One risk is the limit to confidentiality relevant to mandated reporting should any concerns about potential harm to self or others be identified.

What are confidentiality procedures?
All information obtained from assessment and interventions pertaining to your child will be kept confidential in a locked file cabinet at Juniper Gardens Children's Project offices, including all video recordings. Digitally stored information will be stored on a secured, encrypted server that is password protected. Your child will be assigned a participant number and all information pertaining to him/her will be identified by this number only. Information from assessments or observations will be viewed only by project staff, parents, and the employer and will not be shared unless upon your request in verbal or written reports to agencies that assists your child.

Limits to this confidentiality include situations where we learn that your child is in danger of hurting himself/herself or another person, if he/she is in danger of being hurt by someone else, or if content indicates any illegal activity. If this occurs, we will let you and appropriate community professionals know about the situation for the well-being and safety of your child.

You should be aware that even if you agree for your child to participate, you are free to withdraw from the study at any time. If you do withdraw participation from this study, it will not affect your relationship with the Juniper Garden's Children's Project, nor the University of Kansas.

If you cancel permission to use your child's information, the researchers will stop collecting additional information about him/her. However, the research team may use and disclose information

that was gathered before they received your cancellation, as described above. All information pertaining to your child will be stored as described above for 5 years after project.

If you agree for your child to participate, please sign this form and return it to Leslie Bross. Should you desire any additional information or have questions, please contact Leslie at the number or e-mail address listed.

Sincerely,

Leslie Bross, M.S.
I-Connect Plus Project Manager
leslie.bross@ku.edu
(816) 719-6546

Howard Wills, Ph.D., BCBA
Principal Investigator
hpwills@ku.edu
(913) 321-3143

Title of Project: *I-CONNECT PLUS: Enhancing Community Participation for Adolescents and Adults with ASD through Employment Experiences*

PARENT/GUARDIAN CERTIFICATION:
If you agree for your child to participate in this study please sign where indicated, then tear off this section and return it to the investigator. Keep the consent information for your records.

I have read this Consent and Authorization form. I have had the opportunity to ask, and I have received answers to, any questions I had regarding the study and the use and disclosure of information about my child for the study. I agree for him/her to take part in this study. By my signature, I affirm that I have received a copy of this Consent and Authorization form. I understand this means my child will participate in interviews, assessments, and the following (as indicated by a check):

___Video modeling ___ Completion of instructional modules
___ Self-monitoring

I understand that my child will be observed and that information will be used to help the facilitator and KU staff support him/her to be independent and engaged in the community-based employment setting. Intervention will be provided for social communication, organization, and/or job skills in employment settings. My child may be audio-taped and/or video-taped in all sessions to monitor progress and he/she will be given progress on his/her performance. Please initial/sign below for permission.

___ I give permission for videos involving my child to be used for training purposes and for presentations of research outcomes.
___ I give permission for you to obtain information from me as the parent/guardian through interview and/or rating scales.
___ I give permission for you to share information about my child with his/her employer.

I also understand that my permission allows for observation of my child's performance both live and through video recording.
If I am the parent of a person with ASD, I will provide confirmation of the diagnosis of ASD from a prior clinical evaluation or educational diagnosis.

_____ _____
Print son/daughter's first and last name Print parent/guardian first and last name

_____ _____
Parent/guardian Signature Date

_____ _____
Email Phone

I understand that if I have any additional questions about my rights as a research participant, I may call (785) 864-7429 or write the Human Research Protection Program (HRPP), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7563, or email irb@ku.edu.

KU JUNIPER GARDENS CHILDREN'S PROJECT
Life Span Institute

444 Minnesota Avenue
Suite 300
Kansas City, KS 66101
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FAX (913) 371-8522

EMPLOYER OR SERVICE PROVIDER CONSENT FORM
I-Connect Plus Employment Study

Title: *I-CONNECT PLUS: Enhancing Community Participation for Adolescents and Adults with ASD Through Employment Experiences*

Dear Employer or Service Provider,

The Institute for Life Span Studies at the University of Kansas supports the practice of protection for human participants taking part in our research programs. The following information is provided for you to decide whether you wish to participate in the present study. You were chosen as a potential participant in this study because you work for a community agency that provides services to individuals with autism spectrum disorder (ASD) or you are currently the employer of an employee with ASD who could benefit from the I-CONNECT PLUS intervention.

What is the purpose of the project?
The purpose of this project is to use a combination of video modeling, self-management, and online instruction to advance current knowledge and the state of practice related to teaching *social communicative skills, problem solving, and job skills* in community-based employment settings to adolescents and young adults with ASD or other disabilities. These skills will allow the participants to improve their social and job task skills in in employment settings. In addition, these skills could lead to establishing and maintaining gainful relationships with employers, co-workers, and members of the community. Specifically, this project will address the following research objectives:

1) Teach communicative skills, problem solving, and job skills in an effort to allow the participants to improve job performance.
2) Establish and collect data on training procedures for home and community-based employment settings to increase independence and social engagement in selected environments.
3) Implement individualized interventions targeting interpersonal skills and independence in employment settings using video modeling, self-management, and instructional modules to provide consultation and feedback to participants.

What are the study procedures in which you will be involved?

If you agree to participate in this project, you will be asked to (1) give input on the overall job strengths and areas of need of the employee with ASD; (2) participate in the identification of target skills to teach the employee with ASD; (3) participate in the implementation of the intervention with support from the primary researcher; and (4) nominate employees without disabilities who could serve as peer models.

___ ***Video Modeling:*** You will be asked to provide input on the overall content and production of the video exemplars of social communication, problem solving, and jobs skills (video-recorded sessions with 2-4 typically developing co-workers or peers) that will be used for teaching these skills to employees with ASD.

____ ***Self-Management:*** You will be asked to provide input on the overall content and implementation of the self-management component of the intervention, such as wording of the self-management questions to ask the employee with ASD and duration of the self-monitoring intervals.

What are the benefits and risks of you participating in the project?

We expect to see improvements in overall levels of independence, social communication, and jobs skills of the employee with ASD, as well as improved interactions with managers, co-workers, and community members. The service provider or employer may gain better awareness of how to support an employee with ASD, which could be useful for future work experiences. We do not foresee any educational or psychological risks for you by participating.

What are confidentiality procedures?

All information obtained from assessment and interventions pertaining to the employee with ASD will be kept confidential in a locked file cabinet at the Juniper Gardens Children's Project offices, including all video recordings. Digitally stored information will be stored on a secured, encrypted server that is password protected. The employee with ASD will be assigned a participant number and all information pertaining to the employment setting will be identified by this number only. Information from assessments or observations will be viewed only by project staff and will not be shared unless upon your request in verbal or written reports to agencies that assists the employee with ASD.

Limits to this confidentiality include situations where we learn that you are danger of hurting yourself or another person, if you are in danger of being hurt by someone else, or if content indicates any illegal activity. If this occurs, we will let you and appropriate community professionals know about the situation for your well-being and safety.

You should be aware that even if you agree to participate, you are free to withdraw from the study at any time. If you do withdraw from this study, it will not affect your relationship with the Juniper Garden's Children's Project, nor the University of Kansas.

If you cancel participation in the study, the researchers will stop collecting additional information about the employee with ASD. However, the research team may use and disclose information that was gathered before they received your cancellation, as described above. All information pertaining to the employee with ASD will be stored as described above for 5 years after project.

If you agree to participate, please sign this form and return it to Leslie Bross. Should you desire any additional information or have questions, please contact Leslie at the number or e-mail address listed below.

Sincerely,

Leslie Bross, M.S.
I-Connect Plus Project Manager
leslie.bross@ku.edu
(816) 719-6546

Howard Wills, Ph.D., BCBA
Principal Investigator
hpwills@ku.edu
(913) 321-3143

Title of Project: *I-CONNECT PLUS: Enhancing Community Participation for Adolescents and Adults with ASD Through Employment Experiences*

PARTICIPANT CERTIFICATION (Employers or Service Providers)

If you agree to participate in this study, please sign where indicated, then tear off this section and return it to the investigator. Keep the consent information for your records.

I have read this Consent and Authorization form. I have had the opportunity to ask, and I have received answers to, any questions I had regarding the study and the use and disclosure of information about me for the study.

I agree to take part in this study. By my signature I affirm that I am at least 18 years old and have received a copy of this Consent and Authorization form.

I understand this means I will participate in (please initial/sign below):

___ Providing information related to the specific job requirements and perceived strengths and areas of need of the employee with ASD.
___ Nominating a co-worker without disabilities to serve as a potential peer model.
___ Usability tests/reviews of video modeling and/or self-management procedures and devices.

I understand that I will be observed and that information will be used to help the facilitator and KU staff support me to successfully implement I-CONNECT PLUS with employees with ASD. The intervention will be provided for social communication, organization, and/or job skills in community-based employment settings. I may be audio-taped and/or video-taped in some sessions to monitor progress. Please initial/sign below.

___ I give permission for videos involving me to be used for training purposes and for presentations of research outcomes.

_____
Print first and last name

_____ _____
Signature Date

Email: _____ Phone:_____

I understand that if I have any additional questions about my rights as a research participant, I may call (785) 864-7429 or write the Human Research Protection Program (HRPP), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7563, or email irb@ku.edu

KU JUNIPER GARDENS CHILDREN'S PROJECT
Life Span Institute

444 Minnesota Avenue
Suite 300
Kansas City, KS 66101
Voice (913) 321-3143
FAX (913) 371-8522

PEER MODEL CONSENT FORM
I-CONNECT PLUS Employment Study

Title: *I-CONNECT PLUS: Enhancing Community Participation for Adolescents and Adults with ASD Through Employment Experiences*

Dear Peer Model,

The Institute for Life Span Studies at the University of Kansas supports the practice of protection for human participants taking part in our research programs. The following information is provided for you to decide whether you wish to participate in the present study. ***You have been nominated or volunteered to participate as a 'peer model' due to your positive interpersonal skills at work.***

What is the purpose of the project?

The purpose of this project is to use a combination of video modeling, self-management, and online instruction to advance current knowledge and the state of practice related to teaching *social communicative skills, problem solving, and job skills* in community-based employment settings to adolescents and young adults with autism spectrum disorder (ASD) or other disabilities. These skills will allow the participants to improve their social and job task skills in employment settings. In addition, these skills could lead to establishing and maintaining gainful relationships with employers, co-workers, and members of the community. Specifically, this project will address the following research objectives:

1) Teach communicative skills, problem solving, and job skills of employees with ASD.
2) Establish and collect data on training procedures for community-based employment settings to increase independence and social engagement.
3) Implement individualized interventions targeting interpersonal skills and independence in employment settings using video modeling, self-management, and instructional modules.

What are the study procedures in which you will be involved?

If you agree to participate in this project, you will be asked to participate in the creation of video exemplars of social communication, problem solving, and jobs skills (video-recorded sessions with 2-4 other co-workers or peers) that will be used for teaching these skills to employees with ASD. Sessions for video-recording will be of you and 1-2 other individuals acting out a script developed by project staff that depicts implementation of the skill sets. Production of these video recordings will take no more than 2-3 sessions lasting approximately 30-45 minutes.

The videos will then be shown to the employee with ASD to demonstrate how to implement these skills in employment settings. Individuals with ASD using I-CONNECT PLUS, their employer, and/or parent/guardian may view these videos. The video exemplars, with your consent, may also be used as training tools at conferences and other professional development venues. Identifying information, such as your name and area of residence, will be kept confidential.

You will receive a $50 debit card upon completion as compensation for participation in the video models. Investigators may ask for your social security number in order to comply with federal and state tax and accounting regulations.

What are the benefits and risks of you participating in the project?

We foresee minimal educational or psychological risks for you by participating in the study. We see minimal risk relevant to mandated reporting should any concerns about potential harm to self or others be identified.

What are confidentiality procedures?

All information obtained from the video modeling pertaining to you will be kept confidential in a locked file cabinet at the Juniper Gardens Children's Project office. Video recordings will not include your name or other identifiable information. However, as people from this area may view the videos, you may be recognized by them. The video models which you help create will be viewed by the project staff as well as I-CONNECT PLUS participants, their service providers, and/or their parents/guardians. *Limits to this confidentiality* include situations where we learn that you are danger of hurting yourself or another person, if you are in danger of being hurt by someone else, or if content indicates any illegal activity. If this occurs, we will let you and appropriate community professionals know about the situation for your safety and well-being.

If you agree to participate, can you change your mind later?

You should be aware that even if you agree to participate, you are free to withdraw from the study at any time. If you do withdraw from this study, it will not affect your relationship with the Juniper Garden's Children's Project, nor the University of Kansas.

If you agree to participate, please sign this form and return it to Leslie Bross. Should you desire any additional information or have questions, please contact Leslie at the number or e-mail address listed below.

Sincerely,

Leslie Bross, M.S.
I-Connect Plus Project Manager
leslie.bross@ku.edu
(816) 719-6546

Howard Wills, Ph.D., BCBA
Principal Investigator
hpwills@ku.edu
(913) 321-3143

Title: I-CONNECT PLUS: *Enhancing Community Participation for Adolescents and Adults with ASD Through Employment Experiences*

PARTICIPANT CERTIFICATION (peer models):

If you agree to participate in this study please sign where indicated, and return it to the investigator. Keep the consent information for your records.

I have read this Consent and Authorization form. I have had the opportunity to ask, and I have received answers to, any questions I had regarding the study and the use and disclosure of information for the study.

I agree to take part in this study. By my signature I affirm that I am at least 18 years old and have received a copy of this Consent and Authorization form.

I understand this means I will participate in (please initial/sign below):

___ Making video modeling recordings of social communication, problem solving, and job skills.
___ I understand the videos will be included as part of online instructional modules that will help adolescents and adults with ASD learn the targeted skills.

___ I give permission for videos to be used for training purposes and for presentations of research outcomes.

_____
Print first and last name

_____ _____
Signature Date

_____ _____
E-mail Phone

I understand that if I have any additional questions about my rights as a research participant, I may call (785) 864-7429 or write the Human Research Protection Program (HRPP), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7563, or email irb@ku.edu.

KU JUNIPER GARDENS CHILDREN'S PROJECT
Life Span Institute

PARTICIPANT CONSENT – PHOTO AND VIDEO RELEASE

Title: *I-CONNECT PLUS: Enhancing Community Participation for Adolescents and Adults with ASD Through Employment Experiences*

Dear Participant,

The Institute for Life Span Studies at the University of Kansas supports the practice of protection for human participants taking part in our research programs. The following information is provided for you to decide whether you wish to give consent for photographs or video recordings. Please note you can still participate in the I-CONNECT PLUS study if you decline to have photographs or video recordings taken.

Agreement by the subject to confer rights to use photograph(s) and/or video(s) by the University of Kansas:

I give my consent for any photographs or videos taken while I'm a participant on the I-CONNECT PLUS Project to be disseminated by the University of Kansas, or any of its agencies, in any way related to the public information program of this organization.

Name (please print):_____

*Signature:*_____

Date: _____

Contact information:

Street: _____

City: _____State _____Zip_____

Phone: _____ E-mail: _____

If the subject is younger than 18 years and/or has a legal guardian, please complete the following:

Name of parent or guardian (please print):_____

Parent's or guardian's signature: _____

Date: _____

Sincerely,

Howard Wills, Ph.D.
Co-Principal Investigator
(913) 321-3143
hpwills@ku.edu

Leslie Bross, M.S.
Project Manager
(816) 719-6546
leslie.bross@ku.edu

I understand that if I have any additional questions about my rights as a research participant, I may call (785) 864-7429 or write the Human Research Protection Program (HRPP), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7563, or email irb@ku.edu.

I-CONNECT PLUS Employment Study
Assent Procedures
Approval Period 5/11/2018- 11/13/2018

"I am interested in helping young people learn how to increase the social skills at work. I would like you to take part in a program to do this. If you participate, activities will include: an interview with you which will last for about 30 minutes, your parents, and your employer. You will then work with project staff for about 1 hour, 3-5 times per week for approximately 6-15 weeks. Some things you will be asked to do include: 1) complete web-based instruction with readings, videos, and quizzes about skills to improve communicating with supervisors, co-workers, and/or customers, solving problems at work, and general job skills; 2) Using a mobile application on a smartphone to keep track of how well you are using the skills you have chosen to improve and whether or not you are reaching your goal; 3) watching video models in which different social skills at work are demonstrated; 4) allowing a research staff member to observe you at work for data collection purposes. The project staff, employer, and/or co-worker will then be able to talk to you through the device and give you ideas for how you can use the skill, things you can say, and how to act in different situations. They will also give you encouragement, helping you reach your goals.

You will be asked to complete some rating scales both before and after the project that will help us identify goals and let us know how effective the program was. The rating scales will ask questions about your day-to-day activities and relationships with others. For instance the scales will include questions about how easy it is for you to do things without help from others, how often you talk to other people and if you are happy with your performance at work. We will also ask questions about the program such as: Was the program helpful? Was it easy to use? Would you tell others to try it? and Would you like to continue to use it?

This is a voluntary program, so you can choose to agree or not. You can decide to stop participating at any time. If you do decide that you do not want to participate anymore, this will be fine. I will be happy to answer any questions you may have now or anytime we are working together. Do you want to take part in this program?"

APPENDIX C

PARTICIPANT STANDARDIZED ASSESSMENT RESULTS

Table 15

BRIEF-A Assessment Results for Hank

	BRIEF-A Self			BRIEF-A Informant		
Scale/Index	Raw	Scaled	%ile	Raw	Scaled	%ile
Inhibit	14	57	74%	10	45	39%
Shift	13	64	92%	14	69	97%
Emotional Control	17	54	60%	14	47	50%
Self-Monitor	8	46	41%	8	44	38%
BRI	51	56	69%	46	49	56%
Initiate	14	56	72%	15	57	73%
Working Memory	16	66	94%	20	77	99%
Plan/Organize	17	57	75%	24	69	96%
Task Monitor	11	59	84%	16	77	98%
Organization of Materials	21	72	98%	22	70	97%
MI	79	65	92%	97	72	98%
GEC (BRI+MI)	130	62	85%	143	63	87%

Note. BRIEF-A = Behavior Rating Inventory of Executive Function- Adult Version (Roth, Isquith, & Gioia, 2005); BRI= Behavioral Regulation Index; MI= Metacognition Index; GEC= Global Executive Composite.

Table 16

SRS-2 Assessment Results for Hank

Scale/Index	Self	Informant
Awareness	49	69
Cognition	63	62
Communication	53	56
Motivation	57	56
RBR	68	73
SCI	56	60
Total	59	63

Note. SRS-2 = Social Responsiveness Scale-2nd edition (Constantino & Gruber, 2012); RBR=Restricted Interest and Repetitive Behavior; SCI= Social Communication and Interaction.

Table 17

BRIEF-A Assessment Results for Stacey

	BRIEF-A Self			BRIEF-A Informant		
Scale/Index	Raw	Scaled	%ile	Raw	Scaled	%ile
Inhibit	8	36	9%	20	76	97%
Shift	9	51	64%	17	80	99%
Emotional Control	15	49	49%	20	58	80%
Self-Monitor	6	37	16%	18	79	99%
BRI	38	43	28%	75	72	98%
Initiate	10	43	31%	23	80	99%
Working Memory	10	46	50%	16	64	91%
Plan/Organize	12	44	37%	26	74	99%
Task Monitor	7	40	29%	14	69	96%
Organization of Materials	8	36	7%	20	65	90%
MI	47	41	19%	99	73	99%
GEC (BRI+MI)	85	41	19%	174	74	99%

Note. BRIEF-A = Behavior Rating Inventory of Executive Function- Adult Version (Roth, Isquith, & Gioia, 2005); BRI= Behavioral Regulation Index; MI= Metacognition Index; GEC= Global Executive Composite.

Table 18

SRS-2 Assessment Results for Stacey

Scale/Index	Self	Informant
Awareness	58	83
Cognition	62	74
Communication	55	79
Motivation	56	74
RBR	50	87
SCI	58	80
Total	56	82

Note. SRS-2 = Social Responsiveness Scale-2nd edition (Constantino & Gruber, 2012); RBR= Restricted Interest and Repetitive Behavior; SCI= Social Communication and Interaction.

Table 19

BRIEF-A Assessment Results for Cole

	BRIEF-A Self			BRIEF-A Informant		
Scale/Index	Raw	Scaled	%ile	Raw	Scaled	%ile
Inhibit	13	53	63%	11	48	52%
Shift	12	64	92%	12	61	87%
Emotional Control	18	56	67%	10	39	16%
Self-Monitor	12	63	92%	11	54	70%
BRI	55	60	76%	44	47	48%
Initiate	15	60	80%	20	71	98%
Working Memory	14	59	81%	13	55	73%
Plan/Organize	13	46	49%	20	60	84%
Task Monitor	7	40	29%	10	53	67%
Organization of Materials	10	42	27%	13	49	46%
MI	59	50	56%	76	58	79%
GEC (BRI+MI)	114	54	65%	120	54	69%

Note. BRIEF-A = Behavior Rating Inventory of Executive Function- Adult Version (Roth, Isquith, & Gioia, 2005); BRI= Behavioral Regulation Index; MI= Metacognition Index; GEC= Global Executive Composite.

Table 20

SRS-2 Assessment Results for Cole

Scale/Index	Self	Informant
Awareness	52	47
Cognition	56	47
Communication	58	46
Motivation	44	56
RBR	68	53
SCI	54	48
Total	57	49

Note. SRS-2 = Social Responsiveness Scale-2nd edition (Constantino & Gruber, 2012); RBR=Restricted Interest and Repetitive Behavior; SCI= Social Communication and Interaction.

Table 21

BRIEF-A Assessment Results for Aaron

	BRIEF-A Self			BRIEF-A Informant		
Scale/Index	Raw	Scaled	%ile	Raw	Scaled	%ile
Inhibit	11	46	45%	12	51	62%
Shift	9	51	64%	12	61	87%
Emotional Control	13	45	37%	15	48	56%
Self-Monitor	7	42	31%	12	58	80%
BRI	40	45	35%	51	53	65%
Initiate	12	50	53%	14	54	67%
Working Memory	13	56	76%	14	58	81%
Plan/Organize	17	57	75%	20	60	84%
Task Monitor	9	50	56%	10	53	67%
Organization of Materials	18	64	90%	20	65	90%
MI	69	57	74%	78	60	82%
GEC (BRI+MI)	109	52	56%	129	57	77%

Note. BRIEF-A = Behavior Rating Inventory of Executive Function- Adult Version (Roth, Isquith, & Gioia, 2005); BRI= Behavioral Regulation Index; MI= Metacognition Index; GEC= Global Executive Composite.

Table 22

SRS-2 Assessment Results for Aaron

Scale/Index	Self	Informant
Awareness	69	66
Cognition	72	62
Communication	58	61
Motivation	52	61
RBR	75	67
SCI	62	63
Total	65	64

Note. SRS-2 = Social Responsiveness Scale-2nd edition (Constantino & Gruber, 2012); RBR= Restricted Interest and Repetitive Behavior; SCI= Social Communication and Interaction.

Table 23

BRIEF-A Assessment Results for Marshall

	BRIEF-A Self			BRIEF-A Informant		
Scale/Index	Raw	Scaled	%ile	Raw	Scaled	%ile
Inhibit	9	40	19%	17	66	91%
Shift	10	56	77%	17	80	99%
Emotional Control	13	45	37%	26	69	95%
Self-Monitor	8	46	41%	15	68	96%
BRI	40	45	35%	75	72	98%
Initiate	9	40	20%	16	60	87%
Working Memory	10	46	50%	20	77	99%
Plan/Organize	11	41	27%	25	72	97%
Task Monitor	8	50	56%	14	69	96%
Organization of Materials	9	39	17%	9	39	17%
MI	47	41	19%	84	64	90%
GEC (BRI+MI)	87	42	22%	159	69	95%

Note. BRIEF-A = Behavior Rating Inventory of Executive Function- Adult Version (Roth, Isquith, & Gioia, 2005); BRI= Behavioral Regulation Index; MI= Metacognition Index; GEC= Global Executive Composite.

Table 24

SRS-2 Assessment Results for Marshall

Scale/Index	Scaled	Raw
Awareness	54	7
Cognition	53	8
Communication	60	20
Motivation	75	18
RBR	76	20
SCI	62	53
Total	66	73

Note. SRS-2 = Social Responsiveness Scale-2nd edition (Constantino & Gruber, 2012); RBR=Restricted Interest and Repetitive Behavior; SCI= Social Communication and Interaction.

APPENDIX D

VIDEO MODELING SCRIPTS

Amusement Park Video #1 Script: Greeting Phrase

Opening image: Co-worker/peer standing outside amusement park with logo showing.

Peer model: "Having good customer service skills is an important part of working at [amusement park name]. When a park visitor comes through the ticket line, you should look the person in the eye, smile, and give a greeting phrase. Say, "Hello, how are you today?" Watch me say a greeting phrase in the video, and then YOU will say a greeting phrase at work today too."

2nd image: Peer model working as a ticket taker near the computer and confederate park visitor approaches the computer with a paper ticket in hand.

Peer model: "Hello, how are you today?"

Park visitor: "I'm good, thank you!"

END SCENE

Amusement Park Video #2 Script: Greeting and service phrases

Opening image: Co-worker/peer standing outside Worlds of Fun with store logo showing.

Peer model: Having good customer service skills is an important part of working at [amusement park name]. When a park visitor comes through the ticket line, you should look the person in the eye, smile, and give a greeting AND service phrase. Say, "Hello, how are you today?" After the park visitor responds, you should then say a service phrase. You can say, "Can I have your ticket please?" or "Would you like a map?" Watch me say a greeting and service phrase in the video, and then YOU will say a greeting and service phrase at work today too.

2nd image: Peer model working as a ticket taker near the computer and confederate park visitor approaches the computer with a paper ticket in hand.

Peer model: "Hello, how are you today?"

Park visitor: "I'm good, thank you!"

Peer model: "May I have your ticket please?"

Park visitor: "Here you go." [hands ticket to peer model]

END SCENE

Amusement Park Video #3 Script: Greeting, service, and closing phrases

Opening image: Co-worker/peer standing outside Worlds of Fun with store logo showing.

Peer model: Having good customer service skills is an important part of working at Worlds of Fun. When a park visitor comes through the ticket line, you should look the person in the eye, smile, and give a greeting, service, AND closing phrase. Say, "Hello, how are you today?" After the visitor responds, you should then say a service phrase. You can say, "Can I have your ticket please?" or "Would you like a map?" After you have scanned the visitor's ticket, you should say a closing phrase. You can say, "Have a nice day!" or "Have fun at [amusement park]!" Watch me say a greeting, service, and closing phrase in the video, and then YOU will say a greeting, service, and closing phrase at work today too.

2nd image: Peer working as a ticket taker near the computer and confederate park visitor approaches the computer with paper ticket in hand.

Peer model: "Hello, how are you today?"

Park visitor: "I'm good, thank you!"

Peer model: "May I have your ticket please?"

Park visitor: "Here you go." [hands ticket to peer model]

Peer model: "Thank you, have a nice day! And have fun at [amusement park name]!"

END SCENE

Meals on Wheels Video #1 Script: Greeting phrase

Opening image: Peer model standing outside the Meals on Wheels office with logo showing.

Peer model: Having good interactions with others an important part of working at Meals on Wheels. When the volunteer drivers come to get the meals, you should look the person in the eye, smile, and give a greeting phrase. You can say, "Hello, how are you today?" Watch me say a greeting phrase in the video, and then YOU will say a greeting phrase at work today too.

2nd image: Peer model standing on the loading dock with the meal bags in hand.

Peer model: Good morning, how are you?

Volunteer driver: I'm good! How about you?

Peer model: I'm good too, thank you.

END SCENE

Meals on Wheels Video #2 Script: Greeting and service phrases

Opening image: Peer model standing outside the Meals on Wheels office with logo showing.

Peer model: Having good interactions with others an important part of working at Meals on Wheels. When the volunteer drivers come to get the meals, you should look the person in the eye, smile, and give a greeting phrase. You can say, "Hello, how are you today?" After the driver responds, you should then say a service phrase. You can say "Here are your meals" when you give the driver the meals. Watch me say a greeting AND service phrase in the video, and then YOU will say a greeting AND service phrase at work today too.

2nd image: Peer model standing on the loading dock with the meal bags.

Peer model: Good morning, how are you?

Volunteer driver: I'm good! How about you?

Peer model: I'm good too, thank you.

Volunteer driver: I need route CT-7 please.

Peer model: Here are your meals.

Volunteer driver: Thank you!

END SCENE

Meals on Wheels Video #3 Script: Greeting, service, and closing phrases

Opening image: Peer model standing outside the Meals on Wheels office with logo showing.

Peer model: Having good interactions with others an important part of working at Meals on Wheels. When the volunteer drivers come to get the meals, you should look the person in the eye, smile, and give a greeting phrase. You can say, "Hello, how are you today?" After the driver responds, you should then say a service phrase. You can say "Here are your meals" when you give the driver the meals. When the driver leaves, you should say a closing phrase. You can say, "Have a nice day!" Watch me say a greeting, service, and closing phrase in the video, and then you will say a greeting, service, AND closing phrase at work today too.

2nd image: Peer model standing on the loading dock with the meal bags.

Peer model: Good morning, how are you?

Volunteer driver: I'm good! How about you?

Peer model: I'm good too, thank you.

Volunteer driver: I need route CT-7 please.

Peer model: Okay, no problem. Here are your meals.

Volunteer driver: Thank you!

Peer model: You're welcome. Have a good day!

Volunteer driver: You have a good day too! Bye!

END SCENE

Movie Theater Video #1 Script: Greeting phrase

Opening image: Peer model standing outside the movie theater with logo showing.

Peer model: Having good interactions with the customers is an important part of working at [movie theater name]. When a customer comes to the register, you should look the person in the eye, smile, and give a greeting phrase. You can say, "How may I help you?" Watch me say a greeting phrase in the video, and then YOU will say a greeting phrase at work today too.

2nd image: Peer model standing behind the register with movie patron approaching.

Peer model: How may I help you?

Movie patron: I'd like some popcorn and a soda please.

Peer model: Okay, no problem.

END SCENE

Movie Theater Video #2 Script: Greeting and service phrases

Opening image: Peer model standing outside the movie theater with logo showing.

Peer model: Having good interactions with the customers is an important part of working at [movie theater name]. When a customer comes to the register, you should look the person in the eye, smile, and give a greeting phrase. You can say, "How may I help you?" After the customer responds, you should then say a service phrase. You can say "How many tickets do you need?" or "What size popcorn would you like?" Watch me say a greeting AND service phrase in the video, and then YOU will say a greeting and service phrase at work today too.

2nd image: Peer model standing behind the register with movie patron approaching.

Peer model: How may I help you?

Movie patron: I'd like a large popcorn and a soda please.

Peer model: Sounds good, just a minute please. [Gets popcorn and gives popcorn and cup to movie patron]. Here you go.

Movie patron: Thanks!

Peer model: Can I get you anything else?

Movie patron: No, that's it.

END SCENE

Movie Theater Video #3 Script: Greeting, service, and closing phrases

Opening image: Peer model standing outside the movie theater with logo showing.

Peer model: Having good interactions with the customers is an important part of working at [movie theater]. When a customer comes to the register, you should look the person in the eye, smile, and give a greeting phrase. You can say, "How may I help you?" After the customer responds, you should then say a service phrase. You can say "How many tickets do you need?" or "What size popcorn would you like?" When the customer is leaving the register area, you should say a closing phrase like "Enjoy the movie!" or "Have a good day!" Watch me say a greeting, service, AND closing phrase in the video, and then YOU will say a greeting, service, and closing phrase at work today too.

2nd image: Peer model standing behind the register with movie patron approaching.

Peer model: How may I help you?

Movie patron: I'd like some popcorn and a soda please.

Peer model: What size popcorn and soda would you like?

Movie patron: Large for both please.

Peer model: Okay, just a minute please. [Gets the popcorn and cup]

Peer model: Here you go. [Hands popcorn and cup to movie patron] Would you like anything else?

Movie patron: No, that's it….thank you!

Peer model: Okay, have a good night and enjoy the movie!

END SCENE

Nursing home Video #1 Script: Greeting phrase

Opening image: Peer model standing outside nursing home with logo showing.

Peer model: Having good interactions with residents is an important part of working at the [nursing home name]. After you knock on a resident's door to deliver the mail and newspaper, you should look the resident in the eye, smile, and give a greeting phrase. You can say, "Hello, how are you today?" Watch me say a greeting phrase in the video, and then YOU will say a greeting phrase at work today too.

2nd image: Peer model holding mail and newspaper in his hand and knocking on the resident's door.

Peer model: Mail, newspaper!

Resident: Come in.

Peer model: Good morning, how are you today?

Resident: I'm good, thank you.

END SCENE

Nursing Home Video #2 Script: Greeting and service phrases

Opening image: Peer model standing outside nursing home with logo showing.

Peer model: Having good interactions with the residents is an important part of working at the [nursing home name]. After you knock on a resident's door to deliver their mail and newspaper, you should look the resident in the eye, smile, and give a greeting phrase. You can say, "Hello, how are you today?" After the resident responds, you should then say a service phrase. You can say, "Here's your mail and newspaper." Watch me say a greeting AND service phrase in the video, and then you will say a greeting AND service phrase at work today too.

2nd image: Peer model holding mail and newspaper in his hand and knocking on the resident's door.

Peer model: Mail, newspaper!

Resident: Come in.

Peer model: Good morning, how are you today?

Resident: I'm good, thank you. And, how are you?

Peer model: I'm good too! Here's your mail and newspaper.

Resident: Oh, thank you. That's so nice.

END SCENE

Nursing Home Video #3 Script: Greeting, service, and closing phrases

Opening image: Peer model standing outside nursing home with logo showing.

Peer model: Having good interactions with the residents is an important part of working at the [nursing home name]. After you knock on a resident's door to deliver their mail and newspaper, you should look the resident in the eye, smile, and give a greeting phrase. You can say, "Hello, how are you today?" After the resident responds, you should then say a service phrase. You can say, "Here's your mail and newspaper." When you are leaving the resident's room, you should say a closing phrase. You can say, "Have a nice day!" Watch me say a greeting, service, and closing phrase in the video, and then you will say a greeting, service, AND closing phrase at work today too.

2nd image: Peer model holding mail and newspaper in his hand and knocking on the resident's door.

Peer model: Mail, newspaper!

Resident: Come in.

Peer model: Good morning, how are you today?

Resident: I'm good, thank you. And, how are you?

Peer model: I'm good too! Here's your mail and newspaper.

Resident: Oh, thank you. That's so nice.

Peer model: You're welcome…. have a good day and see you tomorrow!

Resident: You too…….see you later.

END SCENE

APPENDIX E

DATA COLLECTION PAGE

Date and phrase: _____ Setting and participant: _____ Primary observer: _____

Secondary observer (IOA): _____

Customer #	1	2	3	4	5	6	7	8	9	10
Greeting phrase	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -
Service phrase	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -
Closing phrase	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -
Convo: Init.	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -
Convo: Exchange	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -
Tone of voice	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -
Timing	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -
Body Language	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -
Verbal Language	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -

Customer #	11	12	13	14	15	16	17	18	19	20
Greeting phrase	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -
Service phrase	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -
Closing phrase	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -
Convo: Init.	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -
Convo: Exchange	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -
Tone of voice	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -
Timing	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -
Body Language	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -
Verbal Language	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -

APPENDIX F

OBSERVER IMPRESSION SCALE

Observer Impression Scale

	1 < less than 25%	**2** < less than 79%	**3** >greater than 80%	**4** 100%	**Customer opportunities** Mark the opportunity # that inappropriate impressions were observed
Tone of Voice					
Timing					
Body Language					
Appropriate Statements					

Percent of correct opportunities:

Tone of Voice: _____ Timing: _____ Body Language: _____ Appropriate Statements: _____

Tone of Voice:

- Appropriate: Participant speaks audibly, clearly, and in a friendly tone of voice.
- Inappropriate: Participant is unable to be heard, mumbles, or speaks in a rude or abrasive tone of voice.

Timing:

- Appropriate: Participant says the customer service phrases in chronological order: greeting phrase first, service phrase second, and closing phrase third.
- Inappropriate: Participant says the phrases out of chronological order (e.g., says the service phrase first, followed by the greeting phrase second).

Body Language:

- Appropriate: Participant orients body towards customer, looks at customer when talking, and limits stereotypy.
- Inappropriate: Participant turns back towards customer, looks down or away, or engages in stereotypic behavior (e.g., hand flapping, rocking, pacing).

Appropriate Statements:

- Appropriate: Participant says only the targeted customer service phrases or other socially appropriate customer service phrases to customers (e.g., “Thank you for waiting”).
- Inappropriate: Participants says an inappropriate comment that is rude or abrasive in nature or a comment related to his/her special interest area that is out of context of the employment setting (e.g., trains, animals).

APPENDIX G

SOCIAL VALIDITY QUESTIONNAIRES

Young Adult Social Validity Questionnaire

Directions: *Answer the following questions by circling the corresponding number you feel for each statement.*

4 = Strongly agree
3 = Agree
2 = Disagree
1= Strongly disagree

1. The video modeling intervention helped me do my job better.

   4 3 2 1

2. The video modeling intervention was easy to use.

   4 3 2 1

3. I liked watching the videos at work.

   4 3 2 1

4. The videos helped me remember the customer service phrases to say.

   4 3 2 1

5. I thought the videos were fun and engaging.

   4 3 2 1

6. I feel supported at my place of employment.

   4 3 2 1

7. I would like to keep watching the videos at work after the research study finishes.

   4 3 2 1

8. I would like to watch videos about different topics.

   4 3 2 1

What did you like best about the video modeling intervention?

What suggestions for improvement about the video modeling intervention do you have?

Please write any additional thoughts or comments about the video modeling intervention below:

If the study were to continue, put in rank order who you would like to watch the videos with between research staff, you, or a person at work (e.g., co-worker, job coach, or supervisor).

1st choice: _____

2nd choice: _____

3rd choice: _____

Employer or Supervisor Social Validity Questionnaire

Directions: *Answer the following questions by circling the corresponding number you feel for each statement.*

4 = Strongly agree
3 = Agree
2 = Disagree
1= Strongly disagree

1. The video modeling intervention appeared to help the employee perform his/her job better.

   4 3 2 1

2. The video modeling intervention was easy for the employee to use.

   4 3 2 1

3. The employee appeared to like watching the videos at work

   4 3 2 1

4. The videos appeared to help the employee remember which customer service phrases to say.

   4 3 2 1

5. The videos appeared to be fun and engaging for the employee.

   4 3 2 1

6. I believe the employee receives adequate support at his/her place of employment.

   4 3 2 1

7. I would like to continue using the videos with the employee at work after the research study finishes.

   4 3 2 1

8. I think the employee could benefit from additional videos about different topics.

4 3 2 1

What did you like best about the video modeling intervention?

What suggestions for improvement about the video modeling intervention do you have?

Please write any additional thoughts or comments about the video modeling intervention below:

Co-worker Social Validity Questionnaire

Directions: *Answer the following questions by circling the corresponding number you feel for each statement.*

4 = Strongly agree
3 = Agree
2 = Disagree
1= Strongly disagree

1. The video modeling intervention appeared to help the employee perform his/her job better.
   4 3 2 1

2. The video modeling intervention was easy for me and the employee to use together.
   4 3 2 1

3. I liked watching the videos at work with the employee.
   4 3 2 1

4. The employee usually interacts well with the customers.
   4 3 2 1

5. The video appeared to help the employee remember what customer service phrases to say.
   4 3 2 1

6. I thought the videos were fun and engaging.
   4 3 2 1

7. I believe the employee receives adequate support at his/her place of employment.
   4 3 2 1

8. I would like to keep watching the videos at work with the employee after the research study finishes.
   4 3 2 1

9. I think the employee could benefit from additional videos about different topics.

4 3 2 1

What did you like best about the video modeling intervention?

What suggestions for improvement about the video modeling intervention do you have?

Please write any additional thoughts or comments about the video modeling intervention below:

APPENDIX H

TREATMENT INTEGRITY CHECKLISTS

Employment setting: _____ Primary data collector: _____

Date: _____ Secondary data collector: _____

VIDEO MODELING TREATMENT INTEGRITY CHECKLIST RESEARCHER AS THE INTERVENTION AGENT		
Video Modeling Instruction		
1. Researcher asks participant to come to manager's office or other designated area to view video. Phrase to say: "Will you come with me to watch an instructional video about customer service skills?"	☐Yes	☐ No
2. If participant agrees, researcher and participant go to quiet space together (e.g., manager's office, staff break room). If participant refuses, researcher will ask why and have conversation about participant's concerns and importance of customer service skills at work.	☐Yes	☐ No
3. In the quiet space, researcher selects the appropriate instructional video for the day from laptop (either video #1, #2, or #3).	☐Yes	☐ No
4. The correct instructional video plays from laptop with sound that's loud enough for the participant to hear.	☐Yes	☐ No
5. When video finishes playing, researcher checks for understanding by asking, "What customer service phrase(s) will you say today?"	☐Yes	☐ No
6. If participant says the correct customer service phrase(s) for the day, researcher will provide behavior specific praise, such as "That's great! I like the way you said the greeting, customer service, and closing phrase." If participant cannot verbalize the correct customer service phrase(s) for the day, researcher will play the video again and say, "That's okay……let's watch the video again to see what customer service phrases you will say."	☐Yes	☐ No
7. Researcher gives option to participant to view video an additional time before data collection begins.. Phrase to say, "Would you like to watch the video one more time before going back to work?" Participant may choose to view the video an additional time or decline.	☐Yes	☐ No
8. Researcher thanks the participant for viewing the video by saying, "Thanks for coming with me and watching the instructional video! I'm excited to hear you say your customer service phrases today at work."	☐Yes	☐ No

Notes:

Video watched today:
☐ Video #1: Greeting phrase
☐ Video #2: Greeting and service phrases
☐ Video #3: Greeting, service, and closing phrases

Start time: _____ End time: _____

Length of total video time (min & sec): _____

Length of total video time + checking for understanding (min & sec): _____

Percent Fidelity: _____ **IOA: _____**

Employment setting: _____ Primary data collector: _____

Date: _____ Secondary data collector: _____

VIDEO MODELING TREATMENT INTEGRITY CHECKLIST JOB COACH AS THE INTERVENTION AGENT		
1. Job coach selects Video #3 from iPad to play.	☐Yes	☐ No
2. Video #3 plays from iPad with audible sound.	☐Yes	☐ No
3. When video finishes, job coach says, "What customer service phrases will you say today?"	☐Yes	☐ No
4. Job coach provides behavior specific praise and feedback based on the student's response. For example, "I like the greeting phrase you chose for today." Or "Remember, a phrase is at least 3 words instead of only 1."	☐Yes	☐ No
5. Job coach asks the student if he wants to watch the video again. For example, "Do you want to watch the video again or are you ready to start work?"	☐Yes	☐ No
6. Job coach thanks the student for watching the video. For example, "Thanks for watching the video! I'm excited to hear you say your customer service phrases today at work."	☐Yes	☐ No

Notes:

Start time: _____ End time: _____

Length of total video time (min & sec): _____

Length of total video time + checking for understanding (min & sec): _____

Percent Fidelity: _____ **IOA: _____**